

# STS-117/13A

## FD 07 Execute Package



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055	60 - 64	<a href="#">OMS Pod Blanket Repair Practice Session Procedure</a> (pdf)
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044	---	<a href="#">FD06 MMT Summary</a> (pdf - Electronic Only)

**Approved by FAO:** Linda Delapp

Last Updated: Jun 14 2007 1:25PM GMT

JEDI (Joint Execute package Development and Integration), v2.04.0003

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057	Updated EVA 3 Inhibit Pad
059	Detailed EVA Repair Procedure
060	SRMS OMS Pod Blanket Repair Procedure
061	Modified Group C Powerdown Procedure

1. In order to support transfer of Shuttle camera images to ISS overnight please add the following words to the flight plan revision

In PRE-SLEEP ACTIVITY - FLIGHT DECK LIST perform step 7 with the following deltas

R12    ✓ VPU PWR    - ON (LED on)

          ✓ Green Jumper - ISS

2. Flight Day 7 Exercise Constraints

The table below summarizes the Shuttle and ISS exercise constraints for today. These constraints are also denoted in your timelines for your reference.

Activity	Exercise Constraints	
	Shuttle	ISS
P6 2B SAW RETRACT	No exercise during SAW latch or deploy/retract motor or EVA driven operations	No exercise during SAW latch or deploy/retract motor or EVA driven operations

3. REPLACE PAGES 2-22, 2-24, AND 3-68 THROUGH 3-77.

FD07

06/14/07 06:51:29

REPLANNED

GMT 06/14/07 (165)

β=41

MET Day 005

STS-117	CDR STURCKOW	SLEEP	POST SLEEP				IO L F U M	P6 2B RETRACT				N2 XFER TERM	EXERCISE	MEAL	IN MU 2*	C I W N C I T 9	XFER	CT W E R C R M	C X F E R		
	PLT/R2/M1 ARCHAMBAULT	SLEEP	POST SLEEP	C I W N C I T 8	POST SLEEP	CT W E R C R M	SSRMS RTRCT VIEWING				EXERCISE	MEAL	MC S	DOUG RVW	XFER		EVA TAGUP	X F E R			
	MS1/EV3/R1 FORRESTER	SLEEP	POST SLEEP			AS P R N A S P R N	POST EVA 2 TOOL CNFG	EVA 3 PROC REVIEW	EVA TAGUP	EVA TOOL GATHER	EMU SWAP	B M I A E N T T S T O T /X L	MEAL	XFER	MC I U	EXERCISE	REPAIR PRACTICE	EVA TAGUP	X F E R		
	MS2/EV4/M2 SWANSON	SLEEP	POST SLEEP			AS P R N	POST EVA 2 TOOL CNFG	P6 2B RETRACT				C X F E R	XFER	MEAL	DOUG RVW	EXERCISE		EVA TAGUP	X F E R		
	MS3/EV2/R1 OLIVAS	SLEEP	POST SLEEP				EVA 3 PROC REVIEW		EVA TAGUP	EVA TOOL GATHER	EMU SWAP	B M I A E N T T S T O T /X L	E_LK PREP	MEAL	EVA 3 TOOL CONFIG	REPAIR PRACTICE	EVA TAGUP	E C I E S E			
	MS4/EV1 REILLY	SLEEP	POST SLEEP				EVA 3 PROC REVIEW		EVA TAGUP	EVA TOOL GATHER	MEAL		E_LK PREP	EXERCISE	EVA 3 TOOL CONFIG	REPAIR PRACTICE	EVA TAGUP	P S R L E E P			
D N	FE-2 WILLIAMS	SLEEP	POST SLEEP	P W R O R E R P K	D P C	P R E P	DCB RVW	DCS	SSRMS RTRCT VIEWING				N2 XFER TERM	EMU H2O RCHRG	MIDDAY-MEAL		TVIS				
E X P - 1 5	ISS CDR ЮРЧИХИН	SLEEP	POST SLEEP	P W R O R E R P K	D P C	CB MNT		HAM	CB-Φ-MNT		TKG-24P-CM-LK CH	TKG CO1 OPEN	C B I C 3 N B B S T L	MIDDAY-MEAL		TKG DEACT	COTP-БЛОК 2-SEARCH	CEVIS	RED		
	FE-1 KOTOV	SLEEP	POST SLEEP	P W R O R E R P K	D P C	МБИ-21-FE1-EXE			TKG-24P-CM-LK CH				MIDDAY-MEAL		IMS		EXERCISE RED	CEVIS			
U P	FE-2 ANDERSON	SLEEP	POST SLEEP	P W R O R E R P K	D P C	P R E P	DCB RVW	PEPS	P6 2B RETRACT				B S A *	BSA INIT	EMU H2O RCHRG	MIDDAY-MEAL		H2 INI	T E P C	* CSA RSPLY	E O V E R V W
SSRMS		WS3 PDGF2																			
S T S	DAY/NIGHT	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>																			
	ORBIT	88	89	90	91	92	93	94	95	96											
	TDRS	W -171																			
		E -46																			
	Z -275																				
ORB ATT		BIAS -XLV -ZVV																			
NOTES		*TERM*COMPACT*TEPC A&C NO EXERCISE*RPRS INIT																			

FD07

06/14/07 06:51:29

REPLANNED

GMT 06/14/07 (165)

B=39

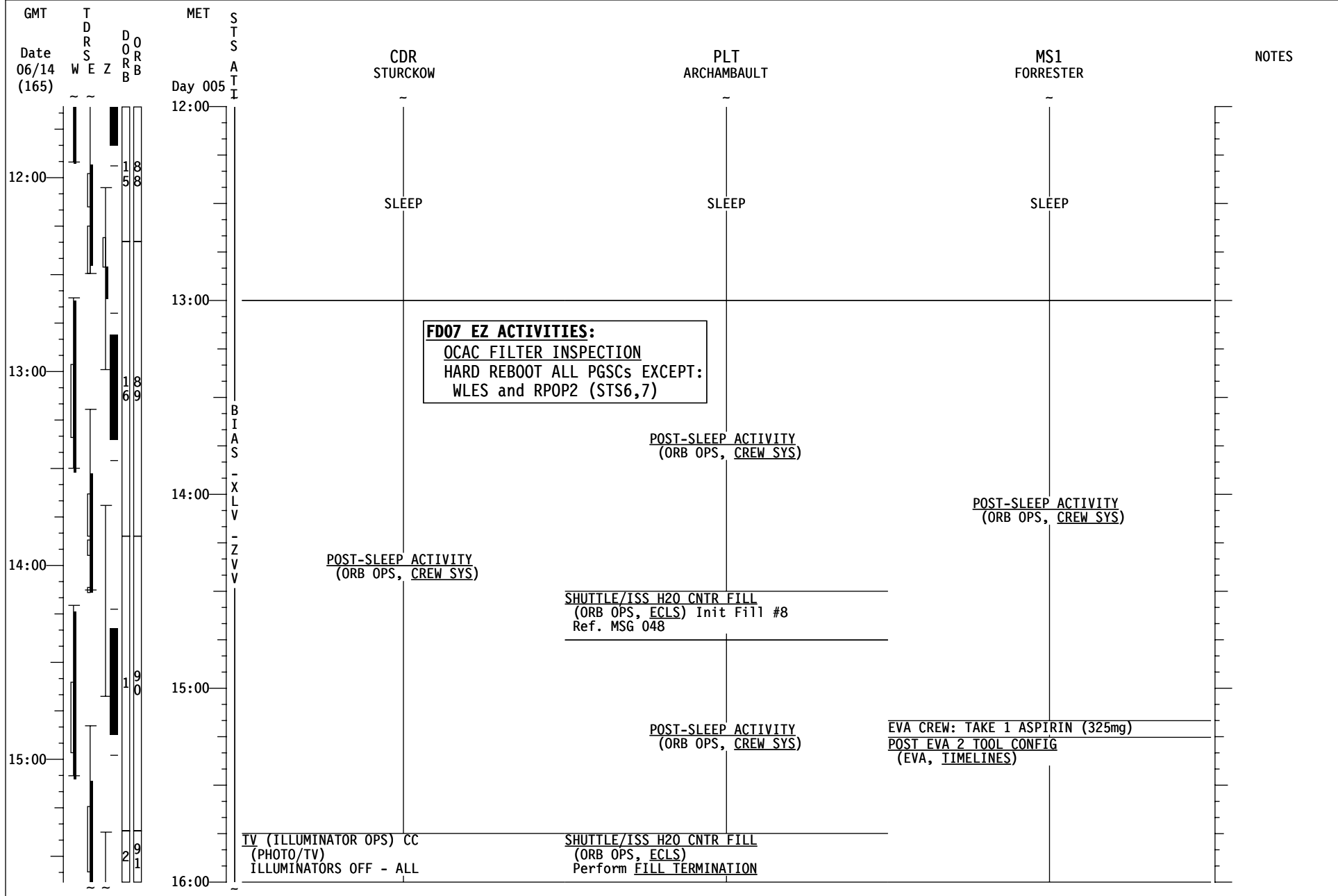
MET

Day 006

S T S - 1 1 7	CDR STURCKOW	N 2 *	P/TV 05 S/U	EVA 3 PROC REVIEW	PRE SLEEP	PE AV O E N T	PRE SLEEP	PMC OCA	PRE SLEEP	SLEEP
	PLT/R2/M1 ARCHAMBAULT	XFER		EVA 3 PROC REVIEW	PRE SLEEP	PE AV O E N T	PRE SLEEP		SLEEP	
	MS1/EV3/R1 FORRESTER	XFER		EVA 3 PROC REVIEW	PRE SLEEP	PE AV O E N T	PRE SLEEP		SLEEP	
	MS2/EV4/M2 SWANSON	XFER		EVA 3 PROC REVIEW	PRE SLEEP	PE AV O E N T	PRE SLEEP		SLEEP	
	MS3/EV2/R1 OLIVAS	EXER CISE		EVA 3 PROC REVIEW	PRE SLEEP		MASK PB/TOOL CONFIG	PRE SLEEP	SLEEP	
	MS4/EV1 REILLY	PRE SLEEP		EVA 3 PROC REVIEW	X B F R E I E F	PRE SLEEP		MASK PB/TOOL CONFIG	PRE SLEEP	SLEEP
D N	FE-2 WILLIAMS	TVIS		EVA 3 PROC REVIEW	EX E R	DPC	PRE SLEEP		SLEEP	
E X P - 1 5	ISS CDR ЮРЧИХИН	RED		EVA 3 PROC REVIEW		DPC	PRE SLEEP		SLEEP	
	FE-1 KOTOV	CEVIS		EVA 3 PROC REVIEW	COX	DPC	PRE SLEEP		SLEEP	
U P	FE-2 ANDERSON	H 2	* HRM S/W	EVA 3 PROC REVIEW	EX E R	PMC DPC	PRE SLEEP		SLEEP	
SSRMS		WS3 PDGF2								
S T S	DAY/NIGHT									
	ORBIT									
	W -171									
	E -46									
	Z -275									
ORB ATT		BIAS -XLV -ZVV								
NOTES		*CMS-CEVIS FILE-REPLC *RPRS TERM								

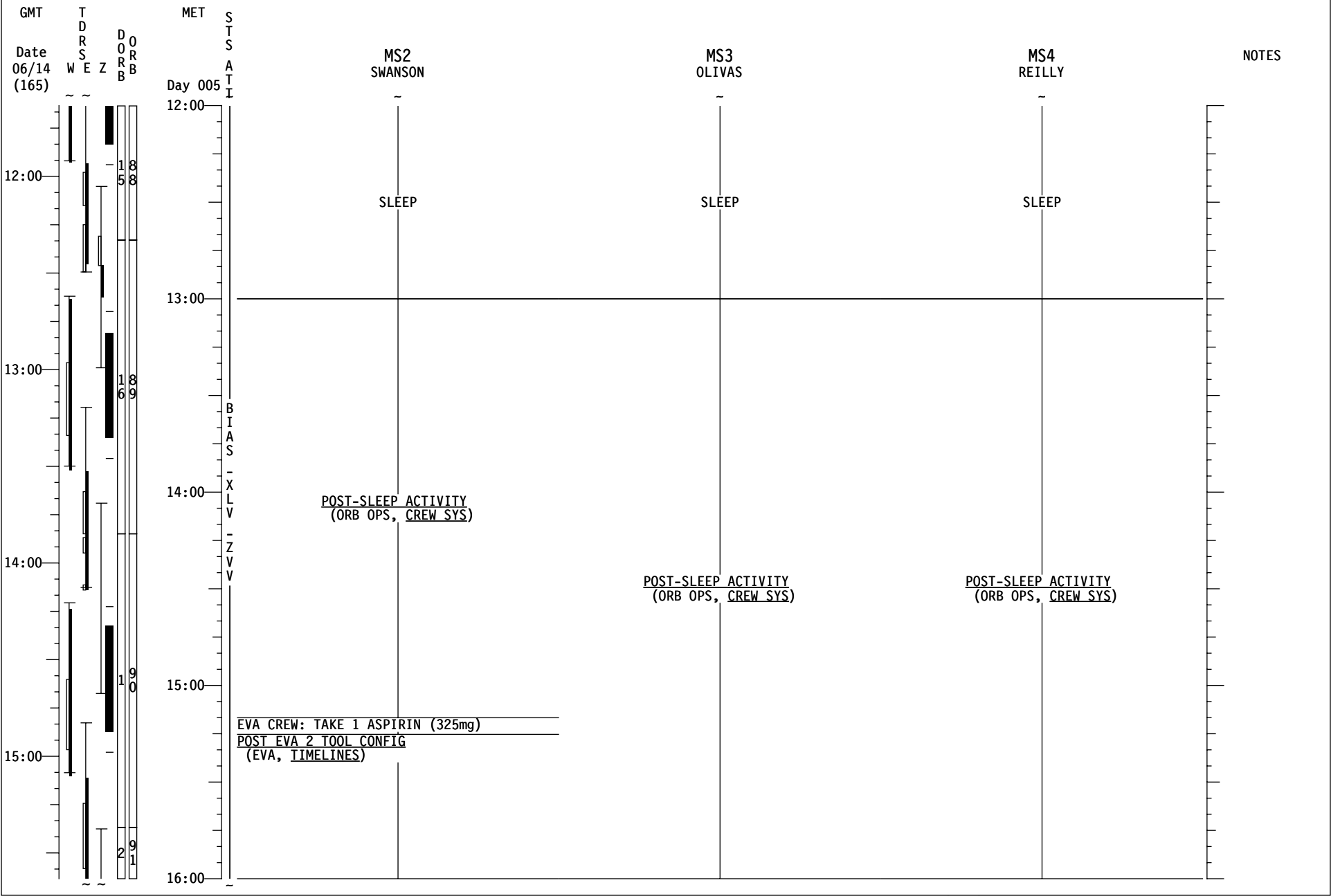
## STS-117 (FD07)

REPLANNED



STS-117 (FD07)

REPLANNED



STS-117 (FD07)

REPLANNED

GMT	T D R S E Z	D O R B	MET	S T S A T I	CDR	PLT	MS1	NOTES
Date 06/14 (165)	W	E	Day 005		STURCKOW	ARCHAMBAULT	FORRESTER	
16:00			16:00		<u>13A ASSY OPS: 4.118 P6 SAW 2B RETRACT</u> (P6 ON Z1 TRUSS) Steps 19.2-19.3, 19.5, 19.7-19.8 Ref. MSG 047	<u>ROBOTICS: 1.404 2B VIEWING FROM</u> <u>2B CLEARANCE POSITION</u> Ref. MSG 047	<u>EVA 3 PROCEDURE REVIEW</u> REF: EVA BRIEFING CARD (EVA, TIMELINES) Ref. MSG 050, 051, 052, 059, and 060	NO EXERCISE DURING P6 2B RETRACTION
17:00			17:00				<u>EVA TAGUP</u> Ref. MSG 056 Contact MCC when review complete using ISS OCA. ISS KU AVAIL: MET 16:50-17:09 MET 17:11-17:26	
18:00			18:00				<u>EVA 3 TOOL GATHER</u> Ref. MSG 053 AND 054	
19:00			19:00				<u>EMU SWAP CC</u> (EVA)	
20:00			20:00		<u>JOINT OPS: 3.103 NITROGEN</u> <u>TRANSFER TERM</u>	<u>EXERCISE</u> Ref. MSG 041, Item 2	<u>EVA SYS: 1.515 EMU METOX/LIOH/</u> <u>BATTERY REPLACEMENT</u> REF: <u>STS-117 CONSUMABLES TRKING CC (EVA)</u>  MEAL	

## STS-117 (FD07)

REPLANNED

GMT Date 06/14 (165)	T D R S W E Z	D O R B	MET Day 005	S T S A T T I	MS2 SWANSON	MS3 OLIVAS	MS4 REILLY	NOTES
16:00					<u>13A ASSY OPS: 4.118 P6 SAW 2B RETRACT</u> (P6 ON Z1 TRUSS) Steps 19.2-19.3, 19.5, 19.7-19.8 Ref. MSG 047	<u>EVA 3 PROCEDURE REVIEW</u> REF: <u>EVA BRIEFING CARD</u> (EVA, TIMELINES) Ref. MSG 050, 051, 052, 059, and 060	<u>EVA 3 PROCEDURE REVIEW</u> REF: <u>EVA BRIEFING CARD</u> (EVA, TIMELINES) Ref. MSG 050, 051, 052, 059, and 060	NO EXERCISE DURING P6 2B RETRACTION
17:00						<u>EVA TAGUP</u> Ref. MSG 056 Contact MCC when review complete using ISS OCA. ISS KU AVAIL: MET 16:50-17:09 MET 17:11-17:26	<u>EVA TAGUP</u> Ref. MSG 056 Contact MCC when review complete using ISS OCA. ISS KU AVAIL: MET 16:50-17:09 MET 17:11-17:26	
18:00						<u>EVA 3 TOOL GATHER</u> Ref. MSG 053 AND 054	<u>EVA 3 TOOL GATHER</u> Ref. MSG 053 AND 054	
19:00						<u>EMU SWAP CC</u> (EVA)		
						<u>EVA SYS: 1.515 EMU METOX/LIOH/ BATTERY REPLACEMENT</u>	MEAL	
					<u>CWC TRANSFER</u> Transfer 1 CWC to ISS Ref. MSG 048	REF: <u>STS-117 CONSUMABLES TRKING CC (EVA)</u>		
20:00					<u>TRANSFER OPS</u> Ref. Transfer List & MSG 043	<u>EVA SYSTEMS: 1.305 EQUIPMENT LOCK PREP</u> REF: <u>STS-117 CONSUMABLES TRACKING CC</u> (EVA)	<u>EVA SYSTEMS: 1.305 EQUIPMENT LOCK PREP</u> REF: <u>STS-117 CONSUMABLES TRACKING CC</u> (EVA)	



FLT PLN/117/FLIGHT

## STS-117 (FD07)

REPLANNED

GMT	T D R S W E Z	D O R B	MET	S T S A T I	MS2 SWANSON	MS3 OLIVAS	MS4 REILLY	NOTES
Date 06/14 (165)	~	~	Day 005	I				
20:00		43	20:00		<u>TRANSFER OPS</u> Ref. Transfer List & MSG 043	<u>EVA SYSTEMS: 1.305 EQUIPMENT</u> <u>LOCK PREP</u> REF: <u>STS-117 CONSUMABLES TRACKING CC</u> (EVA)	<u>EVA SYSTEMS: 1.305 EQUIPMENT</u> <u>LOCK PREP</u> REF: <u>STS-117 CONSUMABLES TRACKING CC</u> (EVA)	
21:00		54	21:00		MEAL	MEAL	EXERCISE Ref. MSG 041, Item 2	
22:00		65	22:00	B I A S X L V Z V V	<u>DOUG REVIEW</u> Ref. MSG 060	<u>EVA 3 TOOL CONFIG</u> (EVA, <u>TIMELINES</u> ) Ref. MSG 058	<u>EVA 3 TOOL CONFIG</u> (EVA, <u>TIMELINES</u> ) Ref. MSG 058	
23:00		76	23:00		EXERCISE Ref. MSG 041, Item 2	<u>BLANKET REPAIR PRACTICE</u> Ref. MSG 055	<u>BLANKET REPAIR PRACTICE</u> Ref. MSG 055	
00:00			00:00		<u>EVA TAGUP</u> Ref. MSG 056 Contact MCC when Tool Config complete using ISS OCA. ISS KU AVAIL: MET 23:15-23:58	<u>EVA TAGUP</u> Ref. MSG 056 Contact MCC when Tool Config complete using ISS OCA. ISS KU AVAIL: MET 23:15-23:58	<u>EVA TAGUP</u> Ref. MSG 056 Contact MCC when Tool Config complete using ISS OCA. ISS KU AVAIL: MET 23:15-23:58	
					<u>TRANSFER OPS</u> Ref. Transfer List & MSG 043	EXERCISE Ref. MSG 041, Item 2	<u>PRE-SLEEP ACTIVITY</u> (ORB OPS, <u>CREW SYS</u> )	

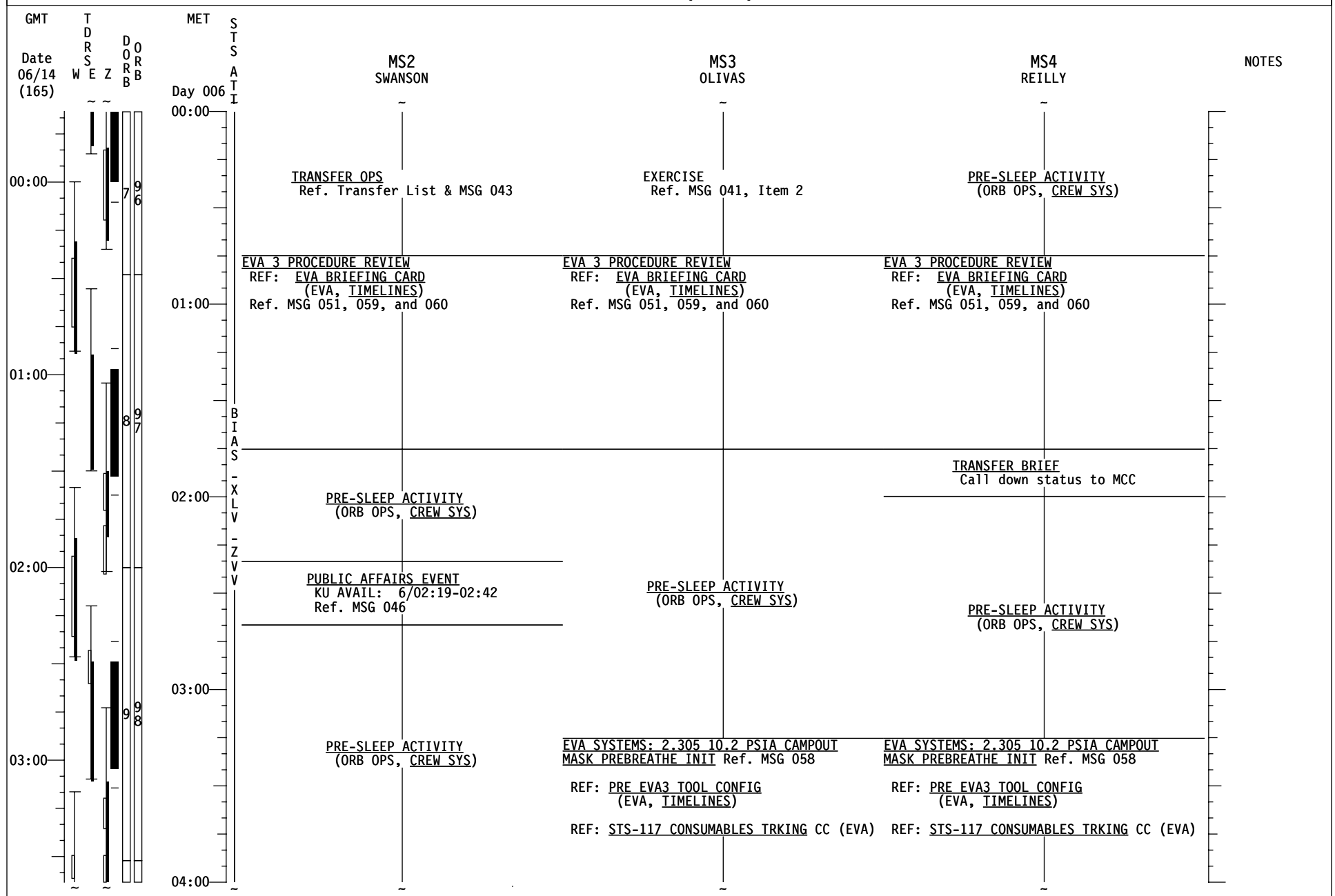
## STS-117 (FD07)

REPLANNED

GMT	T D R S E Z	D O R B	MET	S T S	CDR	PLT	MS1	NOTES
Date 06/14 (165)	W	E	Day 006	A T I	STURCKOW	ARCHAMBAULT	FORRESTER	
00:00			00:00		N2 RPRS USING PL N2 VLVS Term (ORB OPS,ECLS) On MCC Go, Steps 7-12 MCC will TMBU all limits P/TV05 ISS INTERNAL OPS (HC) (PHOTO/TV, SCENES) Setup	TRANSFER OPS Ref. Transfer List & MSG 043	TRANSFER OPS Ref. Transfer List & MSG 043	
01:00			01:00		EVA 3 PROCEDURE REVIEW REF: EVA BRIEFING CARD (EVA, TIMELINES) Ref. MSG 051, 059, and 060	EVA 3 PROCEDURE REVIEW REF: EVA BRIEFING CARD (EVA, TIMELINES) Ref. MSG 051, 059, and 060	EVA 3 PROCEDURE REVIEW REF: EVA BRIEFING CARD (EVA, TIMELINES) Ref. MSG 051, 059, and 060	
02:00			02:00		PRE-SLEEP ACTIVITY (ORB OPS, CREW SYS) Ref. MSG 041, Item 1	PRE-SLEEP ACTIVITY (ORB OPS, CREW SYS)	PRE-SLEEP ACTIVITY (ORB OPS, CREW SYS)	
03:00			03:00		PUBLIC AFFAIRS EVENT KU AVAIL: 6/02:19-02:42 Ref. MSG 046	PUBLIC AFFAIRS EVENT KU AVAIL: 6/02:19-02:42 Ref. MSG 046	PUBLIC AFFAIRS EVENT KU AVAIL: 6/02:19-02:42 Ref. MSG 046	
04:00			04:00		PRE-SLEEP ACTIVITY (ORB OPS, CREW SYS)	PRE-SLEEP ACTIVITY (ORB OPS, CREW SYS)	PRE-SLEEP ACTIVITY (ORB OPS, CREW SYS)	
					NETMEETING VIDEO CONFERENCING [A] (ORB OPS, OCA) PMC KU Avail: 03:34-03:43	[A] Omit VLHS item in Step 1 Omit Step 3 Use A/G2 for Audio and KFX PGSC		OCA-PMC

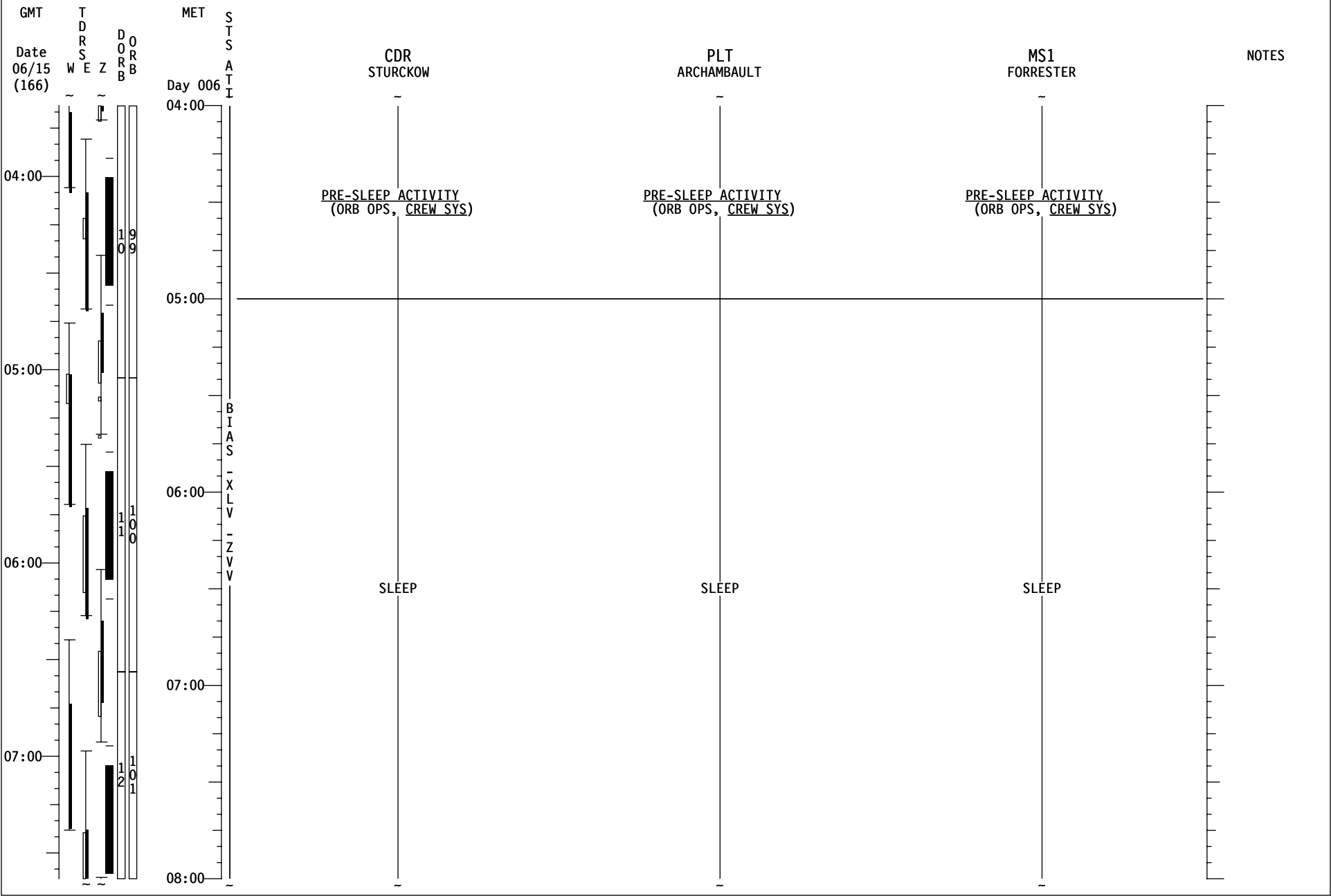
## STS-117 (FD07)

REPLANNED



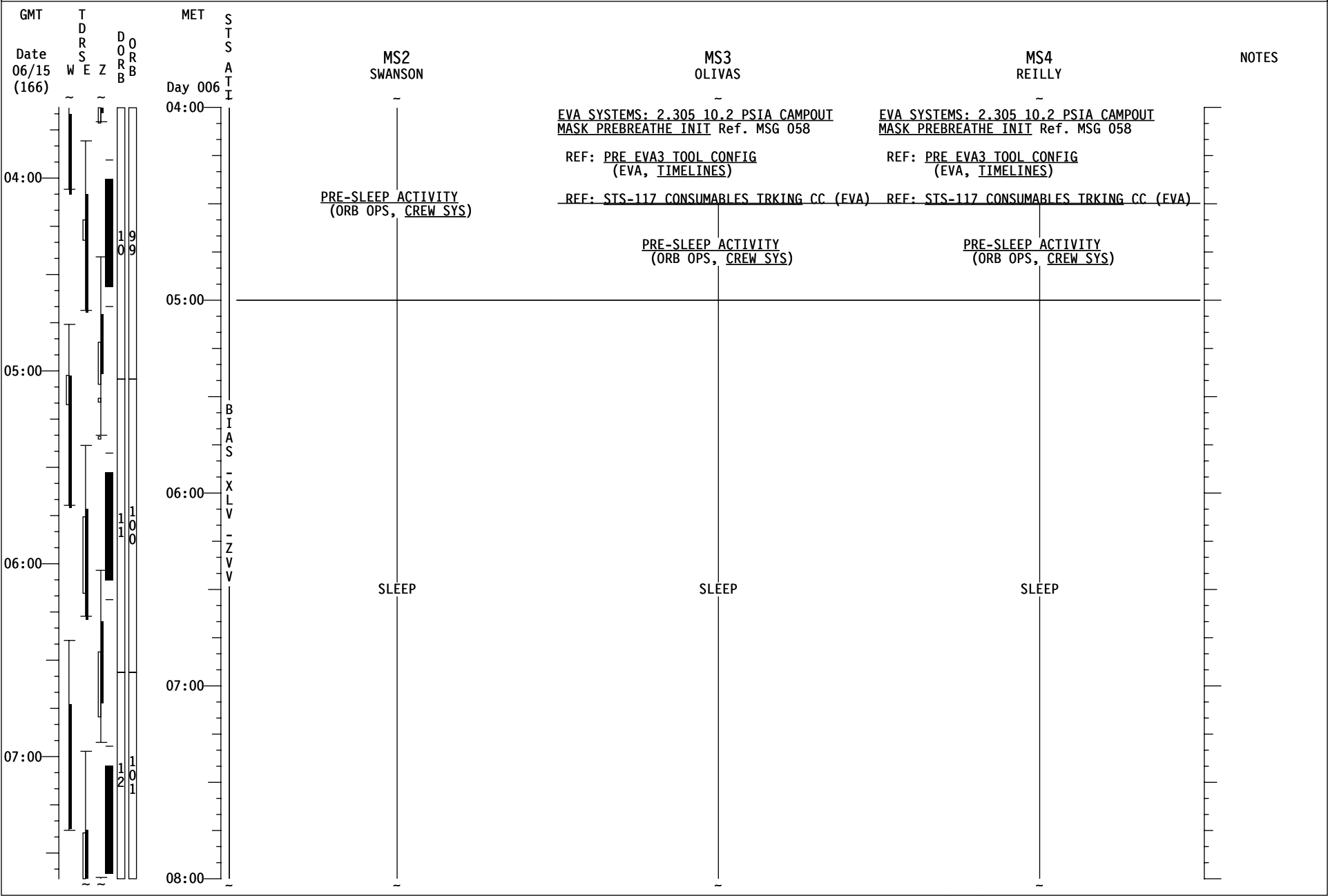
STS-117 (FD07)

REPLANNED



STS-117 (FD07)

REPLANNED



## MSG 042 (15-0423) - FD07 MISSION SUMMARY

Page 1 of 2

Good Morning Atlantis!

Incredible day yesterday with EVA2 and the 2B retract. We will continue with the 2B retract today as well as prepare for the revised EVA3, which includes the OMS pod blanket repair. Keep up the great work!

YOUR CURRENT ORBIT IS: 184 X 179 NM

### NOTAMS:

MORON (MRN) – CLOSED

WAKE ISLAND (WAK) - CLOSED

GOOSE BAY (YYR) – RWY 08/26 CLOSED

HALIFAX (YHZ) – RWY 05/23 CLOSED 14 JUNE 1100-2000Z

LAJES (LAJ) – TACAN LAJ CH45 UNUSABLE

KEFLAVIK (IKF) – UNUSABLE

RIO GALLEGOS (AWG) – UNUSABLE

### NEXT 2 PLS OPPORTUNITIES:

NOR23 ORB 95 – 5/22:42 (FEW 100 220/07P12)

EDW22 ORB 111 – 6/23:01 (SKC 220/16P24)

### OMS TANK FAIL CAPABILITY:

L OMS FAIL: NO

R OMS FAIL: NO

### LEAKING OMS PRPLT BURN:

L OMS LEAK: ALWAYS RETROGRADE

R OMS LEAK: ALWAYS RETROGRADE

### OMS QUANTITIES(%)

L OMS OX = 31.0      R OMS OX = 33.0

FU = 30.8              FU = 32.5

SUBTRACT I'CNCT COUNTER FOR CURRENT OMS QUANTITIES

### DELTA V AVAILABLE:

OMS                              332 FPS

ARCS (TOTAL ABOVE QTY1)      48 FPS

TOTAL IN THE AFT              380 FPS

ARCS (TOTAL ABOVE QTY2)      82 FPS

FRCS (ABOVE QTY 1)              25 FPS

AFT QTY 1                              79 %

AFT QTY 2                              42 %

## MSG 042 (15-0423) - FD07 MISSION SUMMARY

Page 2 of 2

<u>SYSTEM</u>	<u>FAILURE</u>	<u>IMPACT</u>	<u>WORK AROUND</u>
COMM/INST	SSOR 1	Loss of communication between ISS, Orbiter, and EMU	Use SSOR 2 for communication between ISS, Orbiter, and EMU

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## MSG 043 (15-0424) - FD07 TRANSFER MESSAGE

Page 1 of 6

Good morning crew,

Welcome to another fun-filled day of Transfer activities. We've added a couple more transfers due to the two-day mission extension.

The Transfer List Excel file, FD07\_TransferList\_STS117.xls, is located on the KFX machine in **C:\OCA-up\transfer**.

For ISS, the Transfer List Excel file, FD07\_TransferList\_STS117.xls, is located in **K:\OCA-up\transfer**.

### Transfer Notes

- With the mission extension, three additional CWC fills were added. For these fills, you'll need to use the Silver Biocide Kit (Item #29) that you transferred to ISS on FD05. As such, we've re-opened this transfer item and added instructions to use it on Shuttle for CWC fills, then transfer it back to ISS. Let us know when the kit is back on ISS and we'll recheck the item as complete.
- We're looking at switching return locations for 5 MLE Bags H and G. This is because bag H is heavy and needs to be closer to the pallet to protect stack CG and strap loads. Expect confirmation of this return configuration during cabin stow.
- Also due to mission extension, you'll be swapping your used LiOH with 3 new cans from ISS (used LiOH is being left on ISS because there is no Middeck room to return it).
  - Note: When you transfer the used LiOH to ISS, please ensure canister handles are not extended for all the LiOH stowed in NOD1S4\_D2 (secure with tape if needed). This is to prevent the handles from cracking the side of other cans in this location. When closing the NOD1S4\_D2 door, verify LiOH canisters are not compressed.



Handle extended,  
could damage LiOH  
stowed on top.

Handle not extended

### Questions/Answers for the crew

- JR, we're still working on the return drawing for 5 MLE Bag C and would like to know the fullness of the two Hygiene 0.5 CTBs (ie; empty, half full,  $\frac{3}{4}$  full, etc.).

**MSG 043 (15-0424) - FD07 TRANSFER MESSGE**

Page 2 of 6

**Choreography (items for transfer today)**

**TO ISS:**

**Items 8.1, 8.2, and 8.3: TEPC Swap Items**

**FROM ISS:**

**Item 703.6: CSA-CP Return items**

**Items 703.2, 703.3, 703.4: TEPC Return Items**

**Please incorporate uplink pages as follows:**

In **RESUPPLY** tab

Replace Page(s): 8 and 9

In **RETURN** tab

Replace Page(s): 7 and 8

**Changes to the Transfer List are detailed below.**

**RESUPPLY**

Item 29: Un-checked item and updated notes

Item 805: New Item

**RETURN**

Item 708.3: New Item

Item 806: New item

Call us with any questions and have a great day!

- The Transfer Team

## STS-117/13A Resupply Transfer List

CHNG	<input checked="" type="checkbox"/>	FD	Initials	Item #	Item Name	Qty	Initial Stowage	Temp Stowage	Stowage at Undock	Wt (lbs)	PROCEDURES/Constraints/ **Comments
	<input checked="" type="checkbox"/>	3		28	Lower Arm - 2 Leg Assembly - 1 EVA Suit Protective Cover - 5 Thigh/Upper Leg Protective Cover - 1	0.5 CTB	5 MLE Bag C (Flr Stbd 1)		NOD1S1	16.20	**Contains FR's backup EMU Lower Arms
X				29	Silver Biocide Syringe Kit [S/N 1001]	1	5 MLE Bag C (Flr Stbd 1)		NOD1D2 {M-02 Bag S/N 1026}	1.34	<b><u>Return to Shuttle for CWC Fill 14, 15 and 16. After fills are complete, transfer kit back to NOD1D2 {inside M-02 Bag, S/N 1026}</u></b>  **CWC fills 14, 15 and 16 added due to the extended mission duration.  **Replaces ISS Silver Biocide Kit (ref item 701.1)  **3 <u>6</u> of 10 syringes will be used for CWC Fills prior to transferring the kit.
	<input checked="" type="checkbox"/>	5		30	ARMS/GLOVES/LEG RINGS	0.5 CTB	5 MLE Bag D (Flr Stbd 2)		NOD1S1	19.85	**Contains RY/OL backup EMU Lower Arms.
	<input checked="" type="checkbox"/>	5		31	[Clay's] ECOK	1 Mesh Bag	5 MLE Bag D (Flr Stbd 2)		NOD1S1	10.95	
	<input checked="" type="checkbox"/>	3		32	EMU 1 [S/N 3004]	1	EXT A/L	ISS A/L		320.77	**Configured and transferred via EVA procedures/timeline.
	<input checked="" type="checkbox"/>	3		33	EMU 2 [S/N 3010]	1	EXT A/L	ISS A/L		317.33	**Configured and transferred via EVA procedures/timeline.
	<input checked="" type="checkbox"/>	3		34	External A/L Floor Bag	1	EXT A/L	NOD1S1		167.60	**Transferred via EVA procedures/timeline.
	<input checked="" type="checkbox"/>	3		35	EVA Systems Bag	1 Mesh Bag	Crew Created	ISS A/L		60.00	**Configured and transferred via EVA procedures/timeline.

[ ] - notes included by transfer team, - not on actual label  
Page Resupply - 9

## STS-117/13A Return Transfer List

CHNG	<input checked="" type="checkbox"/>	FD	Initials	Item #	Item Name	Qty	Initial Stowage	Temp Stowage	Stowage at Undock	Wt (lbs)	PROCEDURES/Constraints/ **Comments
				704	DCS [760] Rechargeable Battery [S/N Crew Pref]	1	ISS Deployed		Vol 3B	0.50	**Swap with new DCS 760 battery (ref item 2).  <b>Report S/N to MCC-H</b>
				705	DCS [760] Rechargeable Battery [S/N Crew Pref]	4	ISS Deployed		MF43M	2.00	**Swap with new DCS 760 batteries (ref item 9).  <b>Report S/N to MCC-H</b>
				706	EMU 1 [S/N 3004]	1		ISS A/L	MDDK	320.77	**Configured and transferred via EVA procedures/timeline
				707	EMU 2 [S/N 3010]	1		ISS A/L	MDDK	317.33	**Configured and transferred via EVA procedures/timeline
				708	External A/L Floor Bag	5 MLE		ISS A/L	External A/L	154.70	**Transferred via EVA procedures/timeline.
				708.1	EMU Battery [S/N 2059]	1	LAB1D2 Rackfront {0.5 CTB S/N 1219}		External A/L Floor Bag	14.70	**Should be stowed in ascent foam per EVA procedures/timeline.
				708.2	EMU Battery [S/N 2060]	1	LAB1D2 Rackfront {0.5 CTB S/N 1219}		External A/L Floor Bag	14.70	**Should be stowed in ascent foam per EVA procedures/timeline.
X				<u>708.3</u>	<u>PGT Battery</u> <u>[S/N 5012]</u>	<u>1</u>	<u>A/L1 Deployed</u>		<u>External A/L Floor Bag</u>	<u>2.50</u>	<b><u>Verify Battery has connector cover installed.</u></b>  <b><u>Wrap in towel or clothing before stowing in Ext A/L Floor Bag.</u></b>  <b><u>**Battery from PGT 5 used on EVA 1</u></b>
				711	EVA Systems Bag	Mesh Bag		ISS A/L	MDDK	60.00	**Configured and transferred via EVA procedures/timeline.
				712	EVA Laundry Bag	Mesh Bag		ISS A/L	MDDK	6.00	**This bag contains dirty clothing for return.  **Transferred via EVA procedures/timeline.

## STS-117/13A Return Transfer List

CHNG	<input checked="" type="checkbox"/>	FD	Initials	Item #	Item Name	Qty	Initial Stowage	Temp Stowage	Stowage at Undock	Wt (lbs)	PROCEDURES/Constraints/ **Comments
				<b>Return Realtime Additions</b>							
				801	EVA TRANSFER BAG [S/N 1001]	1	NOD1D2 {by return bag 403}		5 MLE Bag A (Flr Port 1)	20.00	<p>**Initially to be stowed in bag 403 but would not fit. Item is stowed next to transfer bag 403. Transfer both at the same time.</p> <p><b>Stow 1 layer of foam on top of CDRA Bed prior to stowing this item for return.</b></p> <p><b>Any displaced foam can be stowed in Return bag 403, in 5 MLE Bag F (Ceil Port 2), or in a bundle in the Ext A/L.</b></p>
				802	12A.1 ISS WARNING BOOK	1	ISS Deployed		MF57K	4.69	<p>Transfer <b>after</b> FD06 'SODF Deploy' activity.</p> <p>**If book will not fit into the ODF Locker at MF57K, then stow in 5 MLE Bag C.</p>
				804	EVA Camera Blanket [S/N 1002]	1	Deployed in ISS A/L for EVA Use		A16 {Still Camera Bag}		<b>Do not transfer until all EVAs are complete.</b>
X				<u>806</u>	<u>LiOH</u> <u>[Decal # 114-10, 114-11, 114-12]</u>	<u>3</u>	<u>NOD1S4 D2</u>		<u>MD52M</u> <u>(LiOH Box)</u>	<u>7.00</u>	<u>**Transfer will occur on FD08 as part of LiOH Transfer on PLT</u>

# 15-0428 (MSG 047) – 2B SAW Retract Lighting Information

## Page 1 of 1

The following camera pan/tilt angles can be used to provide additional illumination during 2B SAW retract. These values assume the SSRMS is in the 2B Clearance position with the MT at WS3. The SRMS is at the SAW Retract Viewing position:

### Mid 1/3rd of 2B SAW:

SSRMS Tip Elbow (-35, +65)

SRMS Elbow (+80, -40)

### Inboard 1/3rd of 2B SAW:

SSRMS Tip LEE

SSRMS Tip Elbow (-23, +29)

SSRMS Base Elbow (-85, -28)

US LAB: (+150, +30)

SRMS Elbow (+65, -25)

MBS Mast Camera (-82, -33) (Right Panel only)

**CWC FILLS**

CWC No.	Additives	Sample? (Note A)	CWC Label	CWC Launch Location
1	Ag Biocide, Minerals	Sample	Blue	Middeck (Note B)
2	Ag Biocide, Minerals	Sample	Blue	Middeck (Note B)
3	Ag Biocide only	----	Green	NOD1P2 (Note C)
4	Ag Biocide only	Sample	Green	NOD1P2 (Note C)
5	Ag Biocide only	----	Green	NOD1P2 (Note C)
6	Ag Biocide, Minerals	Sample	Blue	Middeck (Note B)
7	Ag Biocide, Minerals	----	Blue	Middeck (Note B)
8	Ag Biocide, Minerals	----	Blue	NOD1P2 (Note D)
9	Ag Biocide, Minerals	Sample	Blue	NOD1P2 (Note D)
10	Ag Biocide only	----	Green	NOD1P2 (Note C)
11	Ag Biocide only	----	Green	NOD1P2 (Note C)
12	Ag Biocide only	----	Green	NOD1P2 (Note C)
13	Ag Biocide only	Sample	Green	NOD1P2 (Note C)

Green = Technical

Blue = Potable

Post-Fill:

- Insert label into CWC window  
1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐ 11 ☐ 12 ☐ 13 ☐
- Apply decal to CWC end  
1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐ 11 ☐ 12 ☐ 13 ☐
- Mark CWC S/N on end decal  
1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐ 11 ☐ 12 ☐ 13 ☐
- Report S/N to MCC  
1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐ 11 ☐ 12 ☐ 13 ☐
- Transfer CWC to NOD1P2  
(If insufficient room at NOD1P2, transfer to NOD1P3 and report to MCC)  
1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐ 11 ☐ 12 ☐ 13 ☐

CWC Fill Notes:

- A. Stow filled sample bags in MF43K
- B. In Middeck STBD FLR 1 Bag C; Available S/Ns:  
1004 ☐ 1006 ☐ 1008 ☐ 1050 ☐
- C. In NOD1P2, M-02 Bag; Available S/Ns: 1029 ☐  
1030 ☐ 1064 ☐ 1065 ☐ 1066 ☐ 1068 ☐ 1069 ☐
- D. In NOD1P2, M-02 Bag; Available S/Ns: 1039 ☐ 1079 ☐
- E. If residual H2O noticed in CWC prior to a fill, report to MCC

Kit	S/N	Launch Location	Undock Location	Notes
Ag Biocide Kit	1001	STBD FLR 1 BAG C	ISS NOD1D2	Use for CWC Fills #1-3, and transfer to ISS NOD1D2
Ag Biocide Kit	1003	ISS NOD1D2	STBD FLR 1 BAG C	Use for CWC Fills #4-13 and return to STBD FLR 1 BAG C
Mineralization Kit	1001	STBD FLR 1 BAG C	STBD FLR 1 BAG C	Use for all potable fills
Sample/Purge Kit	1004	STBD FLR 1 BAG C	STBD FLR 1 BAG C	Place 4 empty sample bags in ISS kit S/N 1001

**PWR OPS**

PWR S/N	Launch Location	Actions
1025	ISS A/L1D1_B2	After EMU Recharge on FD6, dump on TBD, refill on TBD; xfer to ISS A/L1D1_B2
1007	ISS A/L1D1_B1	Xfer to middeck for dump on TBD; refill on TBD; xfer to ISS A/L1D1_B1
1012	ISS A/L1D1_A2	"
1018	ISS A/L1D1_A2	"
2002	ISS A/L1D1_B2	Xfer to middeck for dump on TBD; refill on TBD; xfer to ISS A/L1D1_B2 (OGS)

PWRs Dumped

1007 ☐ 1012 ☐ 1018 ☐ 1025 ☐ 2002 ☐

PWRs Refilled

1007 ☐ 1012 ☐ 1018 ☐ 1025 ☐ 2002 ☐**Note**

Do not detach PWR (EMU H2O Recharge Bag) QD restraint during PWR ops



## MSG 049A - MEDS POWER SAVINGS CUE CARD

For additional power savings, only use IDPs/MDUs as needed.

For IDP 1/2/3, use the following Cue Card procedure when powering the last IDP Off/On:

### **IDP/CRT 1 (2,3) POWER OFF**

C3	For IDP 1(2, 3), BFC CRT SEL – 1+2 (2+3, 3+1)
	BFC CRT DISP – ON
F7	CRT 1(2, 3) – OFF
C2	IDP/CRT 1(2, 3) PWR sw – OFF

### **IDP/CRT 1 (2,3) POWER ON**

C2	IDP/CRT 1(2, 3) PWR sw – ON
F7	CRT 1(2, 3) – ON
C3	BFC CRT DISP – OFF

*Note: The IDP/CRT 1 (2,3) POWER OFF procedure (above) will ensure the SM alert light remains OFF after the last forward IDP is powered off. This procedure will ensure that the SM Alert Light will illuminate if a new alarm is annunciated by the Software.*

## MSG 050B (15-0436B) - FD07 EVA SUMMARY

Page 1 of 2

### EMU Water Recharge Status:

Regarding Pat's RESRV H2O ON message, given that EVA2 was a relatively long EVA and you were using METOX, it is not surprising that you used quite a bit of water during the EVA. That said, we were not expecting you to get into your reserve tank. Pat's EMU was last recharged with water on ISS following the Inc 14 stage EVAs in January. This, coupled with the anomalous water pressure readings we saw during the post EVA1 water recharge, has lead us to schedule an additional water recharge today for the EVA 3 EMUs as a verification that the water tanks are indeed full. (Note that the water recharge performed last night, Post EVA2, was nominal, indicating that the IRU was operating properly.) This activity has been scheduled on the ISS crew.

### EVA 3 Blanket Repair Training and Prep Activities:

We have planned the following activities for you today regarding preparation for the OMS Blanket Repair task:

- EVA 3 Procedure Review
  - Review of video files, training materials, and procedures
- EVA Tag up
  - Conference with MCC
- EVA Tool Gather
  - Gather additional EVA tools
  - Preparation of IVA tools for EVA use
- IVA Blanket Repair Practice
  - Practice working with the repair tools

Due to the changes in the EVA, the following products have been uplinked (the detailed timeline will reference you to the specific messages for each activity) :

- Space-to-Ground EVA Tagup Outline
- Updated EVA 3 Inhibit Pad
- Updated EVA 3 Summary Timeline
- Updated EVA 3 Tool Config (may be uplinked later in the day)
- Detailed EVA Repair Procedure (may be uplinked later in the day)
- Blanket Repair Briefing Package
- EVA Tool Gather Procedure
- OMS POD Blanket Repair Tool Preparation Procedure
- OMS POD Blanket Repair Practice Session Procedure
- Video files: These videos were taken during development testing so there are some clips that are not necessarily the baseline but we thought you might find them valuable. They can be found at **U:\Temp\EVA\_OMS\_Blanket\** on the ISS Ops LAN.

**MSG 050B (15-0436B) - FD07 EVA SUMMARY**

Page 2 of 2

File Name	Blanket Activity	Description
01_OMS_folding.wmv	Blanket Patting/Pushing	Push blanket down with hand - TPS scraper can be used but is not the preferred tool. Note blanket memory. Massage blanket for shaping and filling gap.
02_OMS_stapling.wmv	Stapling	Separate the blankets using fingers, scrapers, and equipment hook (equipment hook worked best). Joe T. was able to jam a stapler, and it later broke when trying to overcome the jam using force (so, we don't recommend this). It is possible you might be able to staple all the way to the forward edge of the blanket, but there is a frayed cylindrical gap filler on the corner of the damaged blanket that might make stapling near the edge difficult.
03_OMS_pins.wmv	Pins	Push pins into blanket and tile. You can see that either grasping the pin nearer the tip of the pin is helpful, angling the pin is helpful, and having a straight pin to start with is helpful.
04_OMS_pins-with-punch.wmv	Pins	As a backup, you can use the dental tool in the blanket before pushing in the pins. When you insert into tile, just barely break through coating, don't dig around in tile.
05_OMS_more-pins.avi	Pins	This is a demonstration of how to end up with flush pins. Insert pin part-way into tile while it is straight. Then bend it slightly until it is parallel with blanket, and then complete the installation.

1  
2  
3  
4  
5  
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8  
9

MSG051 (15-0429) - EVA 3 SUMMARY TIMELINE

TIME HR : MIN	IV	EV1 (RY)	EV2 (OL)	
00:00	<div>THE FOLLOWING TASKS CAN BE PERFORMED AFTER 2B RETRACT IF TIME PERMITS:</div> <ul style="list-style-type: none"><li>SARJ LAUNCH RESTRAINTS (01:00)</li><li>S3 DRAG LINK/KEEL PIN STOW (01:00)</li><li>S3/S4 CLOSEOUT (up to 00:50)</li></ul>	<u>POST DEPRESS</u> (00:05)	<u>POST DEPRESS</u> (00:05)	00:00
		<u>EGRESS</u> (00:15)	<u>EGRESS</u> (00:15)	
		<u>OMS POD SETUP</u> (00:30)	<u>OMS POD REPAIR</u> (02:30)	
01:00		<u>H2O/H2 VENT VALVE R&amp;R</u> (01:30)		01:00
02:00				02:00
		<u>OMS POD CLEANUP</u> (00:30)		
03:00		<u>2B RETRACT</u>	<u>2B RETRACT</u>	03:00
04:00				04:00
05:00				05:00
06:00		<u>CLEANUP/INGRESS</u> (00:35)	<u>CLEANUP/INGRESS</u> (00:35)	06:00
		<u>PREREPRESS</u> (00:05)	<u>PREREPRESS</u> (00:05)	

# MSG 052 (15-0430) - CREW OVERVIEW PACKAGE – OMS POD BLANKET REPAIR



**STAPLING**



**PINNING**

**Primary Options**



# BIG PICTURE WORDS

All of us would like to extend a warm congratulations to both the STS-117 crew and ISS crew for the exemplary teamwork and leadership demonstrated thus far during the 13A mission. The challenges associated with such a complex mission demand nothing less than everyone's best efforts and performance. Here on the ground we're proud to be part of such a great team, and together are working out a plan to repair the damaged OMS Pod Blanket during EVA 3.

As you know, a corner of an AFRSI blanket has partially lifted from the IML on the left OMS Pod. In addition, the adjacent blanket to the left of the damaged blanket has partially lifted along the leading edge of the white tile. We have excellent photos on the ground that have helped us to fully understand the damaged areas, and as a result have built detailed mockups of the blankets and tile to aid us in designing a workable plan to fix it.

A highly trained team of DX, CB, DA8, XA, KSC, TPS, and engineering reps have worked through several iterations of repair techniques in B9, the NBL, VR Lab, and various thermal and aero testing environments. We've narrowed down the repair options from three leading candidates, to one, and the primary option has been ranked #1 in terms of EVA comfort-level, do-ability, thermal/aero testing, and ease of operations. Outlined below is a high-level description of the repair. Very detailed information regarding tools and techniques will follow on future slides, accompanied with photos depicting repair details and nomenclature.

The primary repair plan includes 4 basic parts (order depends on which blanket we are addressing):

1. Patting down the lifted leading edge on the adjacent blanket (use gloved hand or TPS scraper)
2. Patting down the damaged blanket (use gloved hand or TPS scraper)
3. Stapling damaged blanket to adjacent blanket using IV medical stapler
4. Pinning the adjacent blanket to white tiles using Tile Overlay NiC pins (to be called tile pins and retention pins)
5. Pinning the damaged blanket to white tiles using Tile Overlay NiC pins
6. Taking very specific photo closeouts and WVS scans of the repaired worksite

Consider the following details regarding the TPS material properties and constraints:

1. Avoid contact with tiles, they are fragile
2. Damaged blanket is thick AFRSI with a ceramic coating; ceramic coating is somewhat difficult to punch through using pin. An IV dental tool with modified tether point can be used to puncture through blanket and tile first, if required
3. Avoid pushing any pins through gap filler (frayed cylindrical gap filler ok to penetrate if necessary)
4. Be aware of MWS and tool proximity to tile

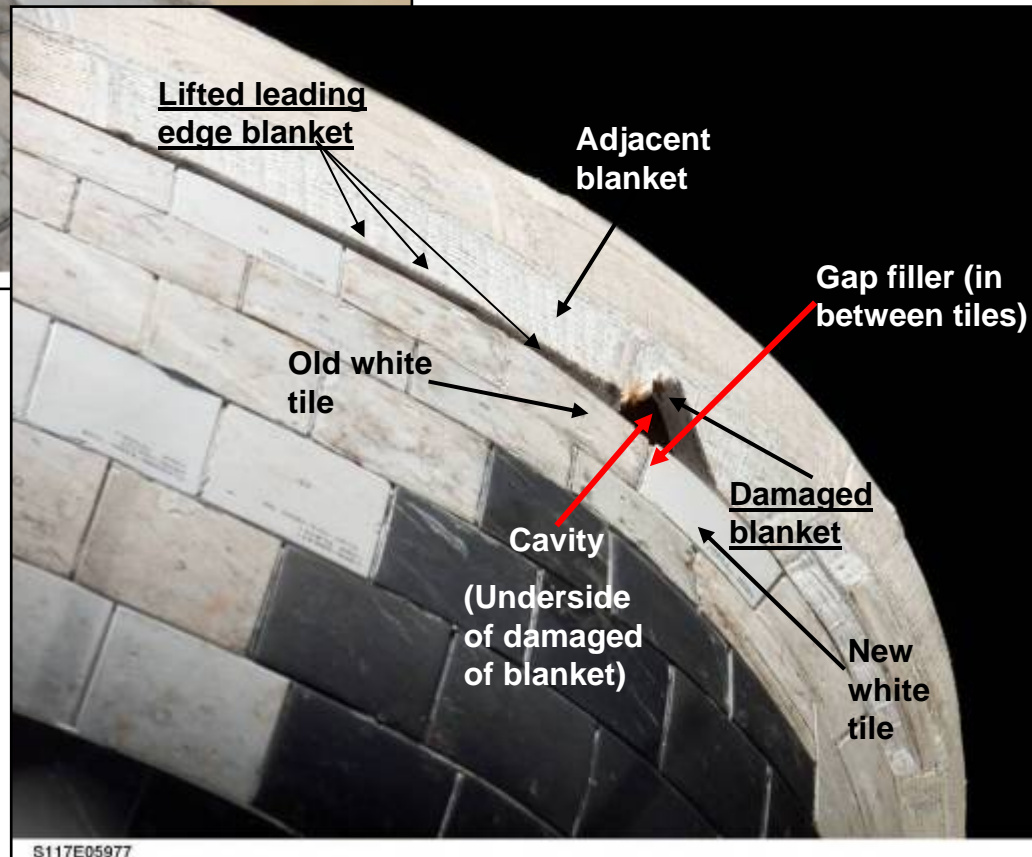
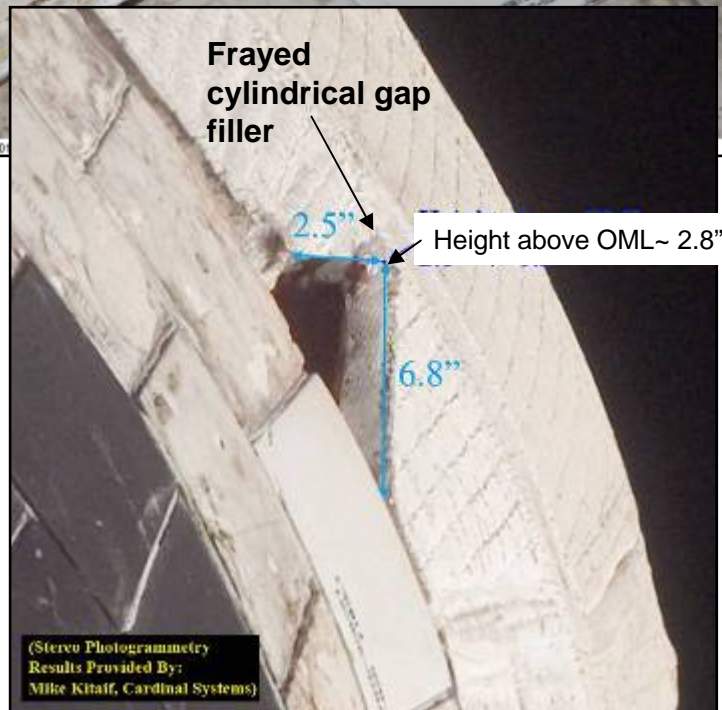
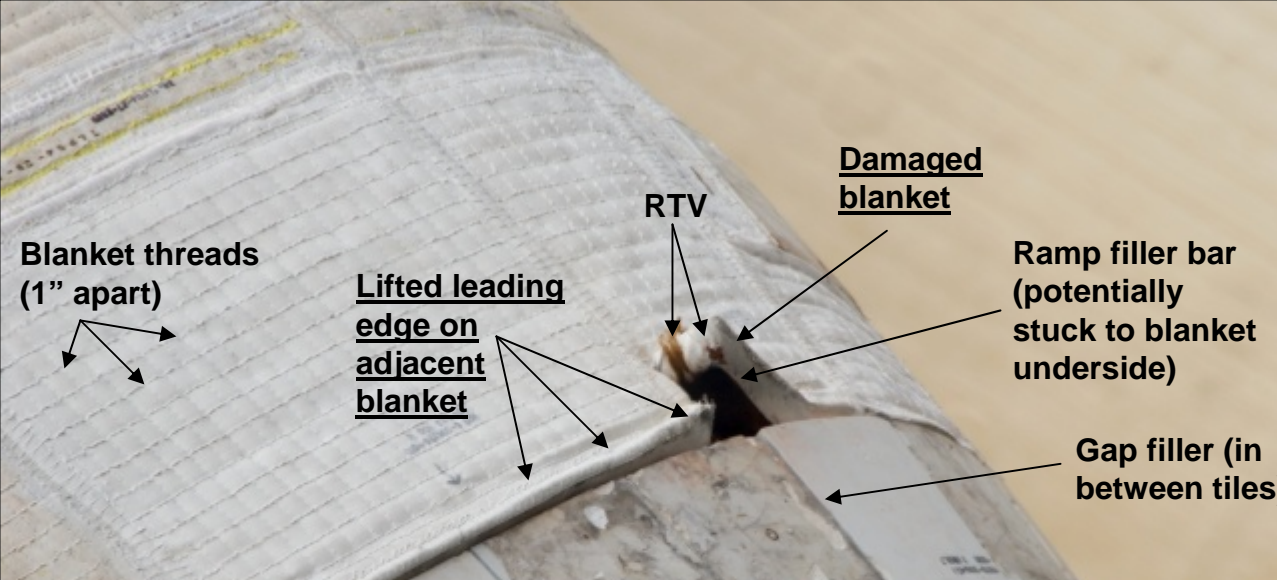
## BIG PICTURE WORDS - CONT

- A series of IFM procedures will be uplinked outlining required work to prepare various IFM/Medical tools to be used during the EVA. In addition, this package will include high-level recommendations for MWS tool config. There will be IV time dedicated to building and practicing with these tools
- The PDRS folks designed a workable position at the damaged worksite. We modeled the position in the VR lab using Charlotte, and had CB reps perform repair techniques. A fully extended WIF extender is required to reach the worksite, and we have deleted the ingress aid option because it gets too close to tile. There isn't much room for GCA forward/aft of the worksite; however, there is ~ 5 feet of margin left and right of the damaged blanket. The following conclusions were reached at the VR eval:
  1. The stapling technique induced very low loads into the arm. It required a very high force to slip a joint (with purposely induced high loads)
  2. In general, perform actions using short and quick impulses, avoid imparting high loads over a long period.
  3. Visibility using the stapler is acceptable
  4. Crewmember may have to pitch body down to optimize access to damaged blanket
  5. Pin insertion into the blanket involves breaking through a pretty tough coating; crew noted that inserting pin at 45 degrees to surface of blanket was easier than installing pin orthogonal to surface. Insertion at less than 45 degrees tends to slide off of coating without puncturing
  6. Worksite access and visibility is acceptable
- Recommend discussing EVA comm and RMS protocol for EVA 3 repair plan. Consider plan if emergency ingress is required
- The rest of the overview pitch will include information regarding Damaged Cavity Details, Worksite Overview, Repair Details, and Tool Config Recommendations

## **UNDERSTANDING THE PROBLEM**

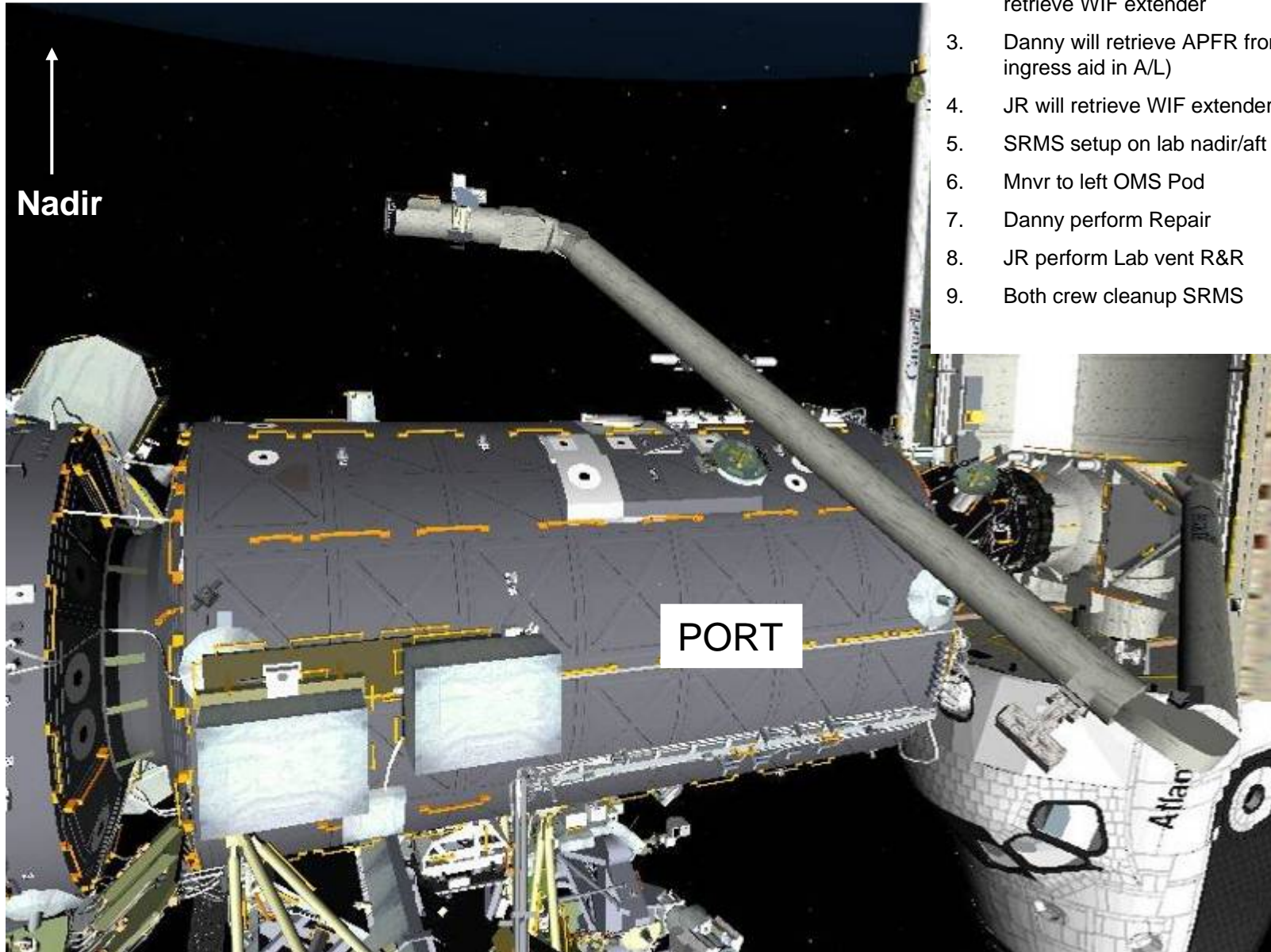


# LEFT OMS POD BLANKET DAMAGE NOMENCLATURE



## **WORKSITE OVERVIEW**

# SRMS PRE-INSTALL POSITION

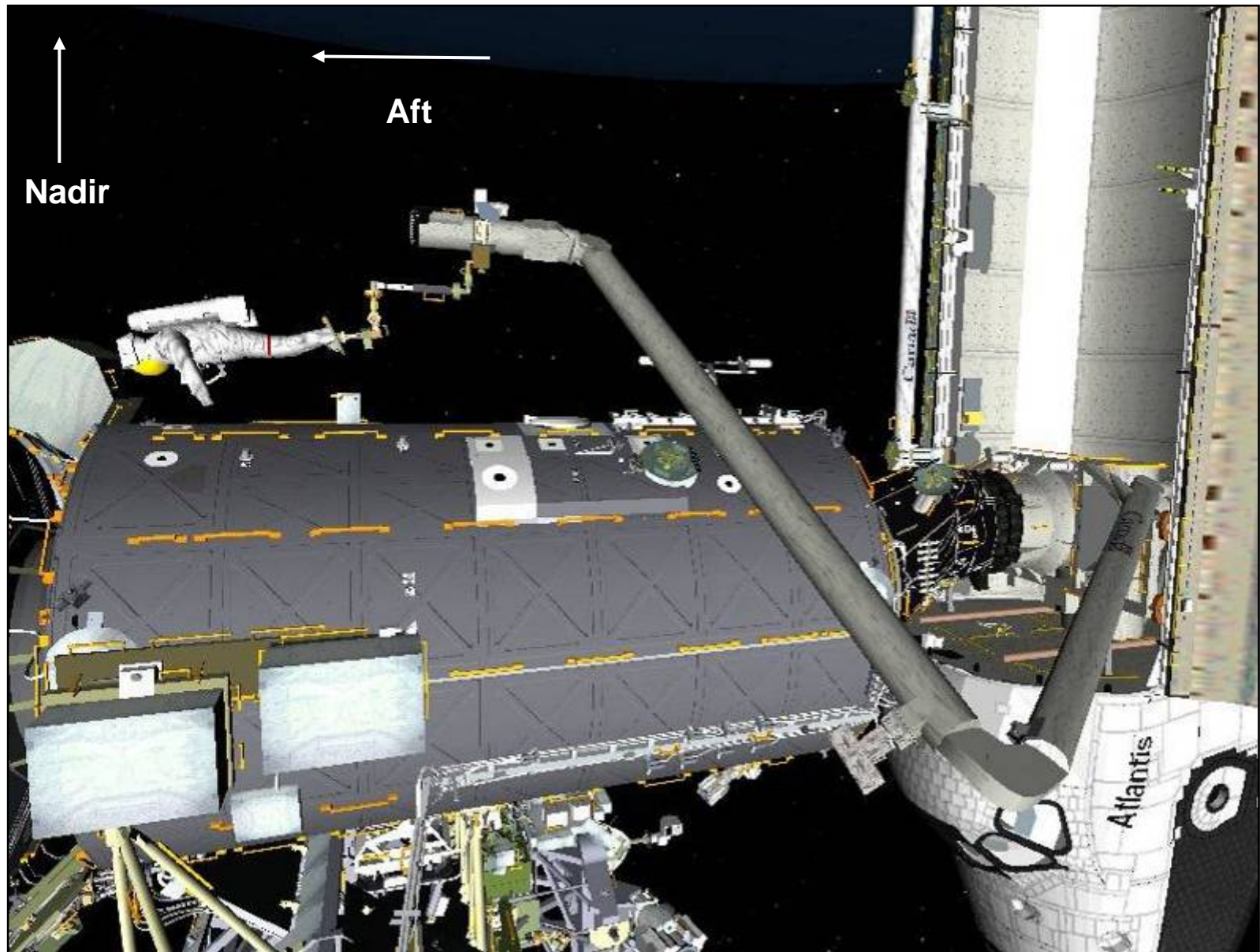


## BIG PICTURE SETUP PLAN

1. Danny will egress with all tools in crewlock bag and will retrieve APFR
2. JR will egress with PAD and WIF adapter and will retrieve WIF extender
3. Danny will retrieve APFR from S0-07 (temp stow ingress aid in A/L)
4. JR will retrieve WIF extender from ESP2
5. SRMS setup on lab nadir/aft
6. Mnvr to left OMS Pod
7. Danny perform Repair
8. JR perform Lab vent R&R
9. Both crew cleanup SRMS

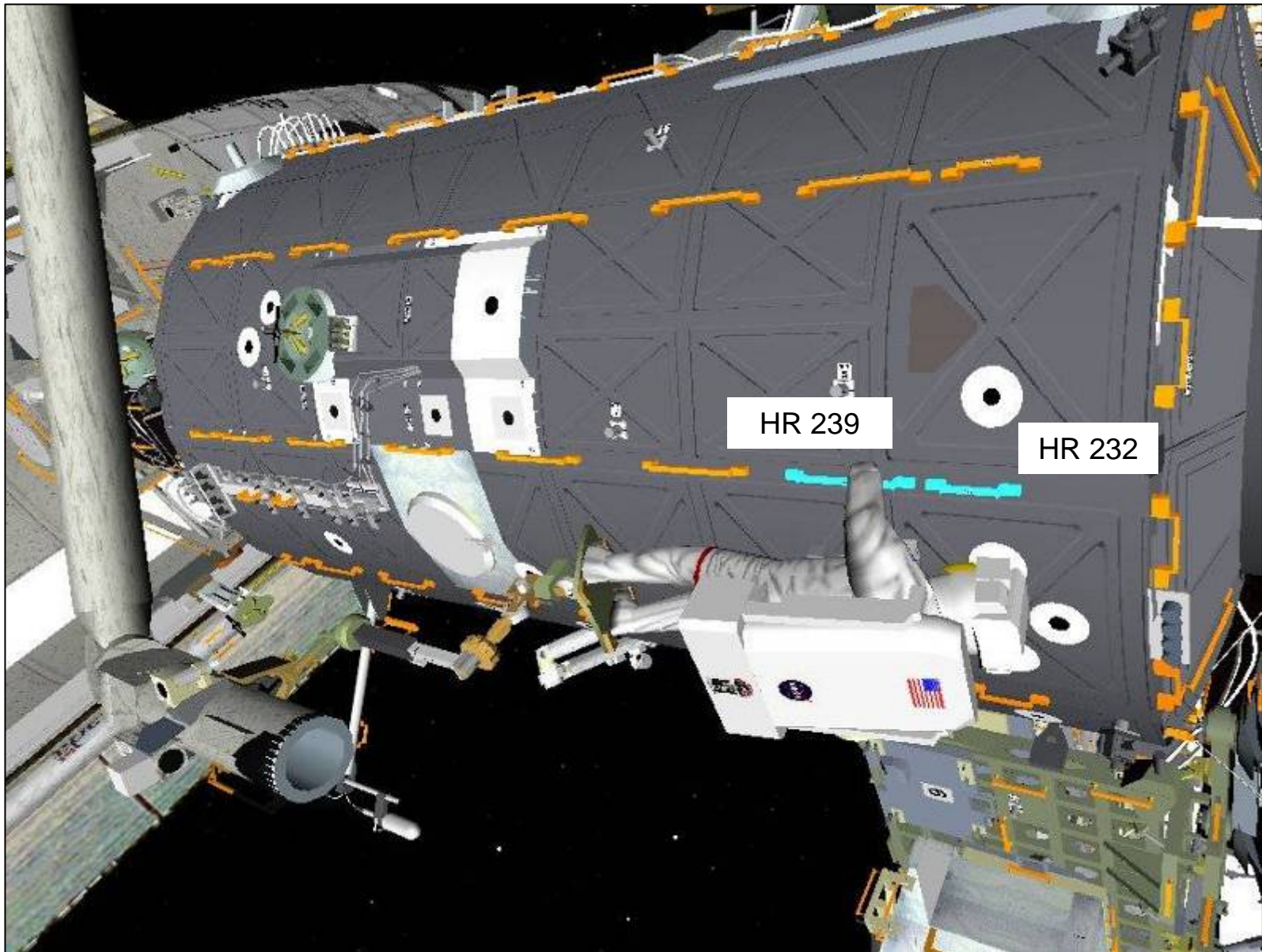


## SRMS INGRESS POSITION



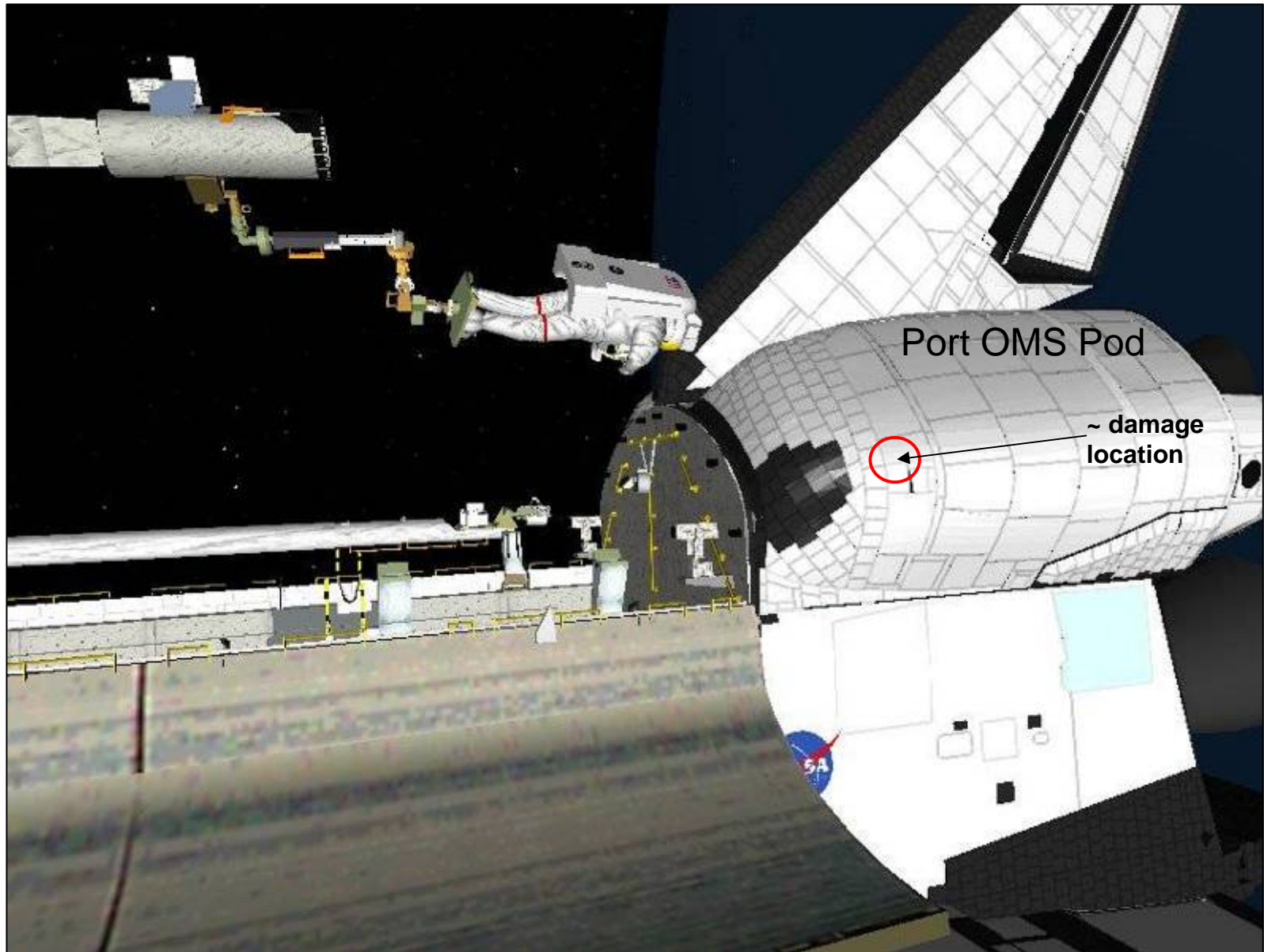
## SRMS INGRESS POSITION – CLOSE-UP

Can Use Lab handrails 239 and 232 for ingress

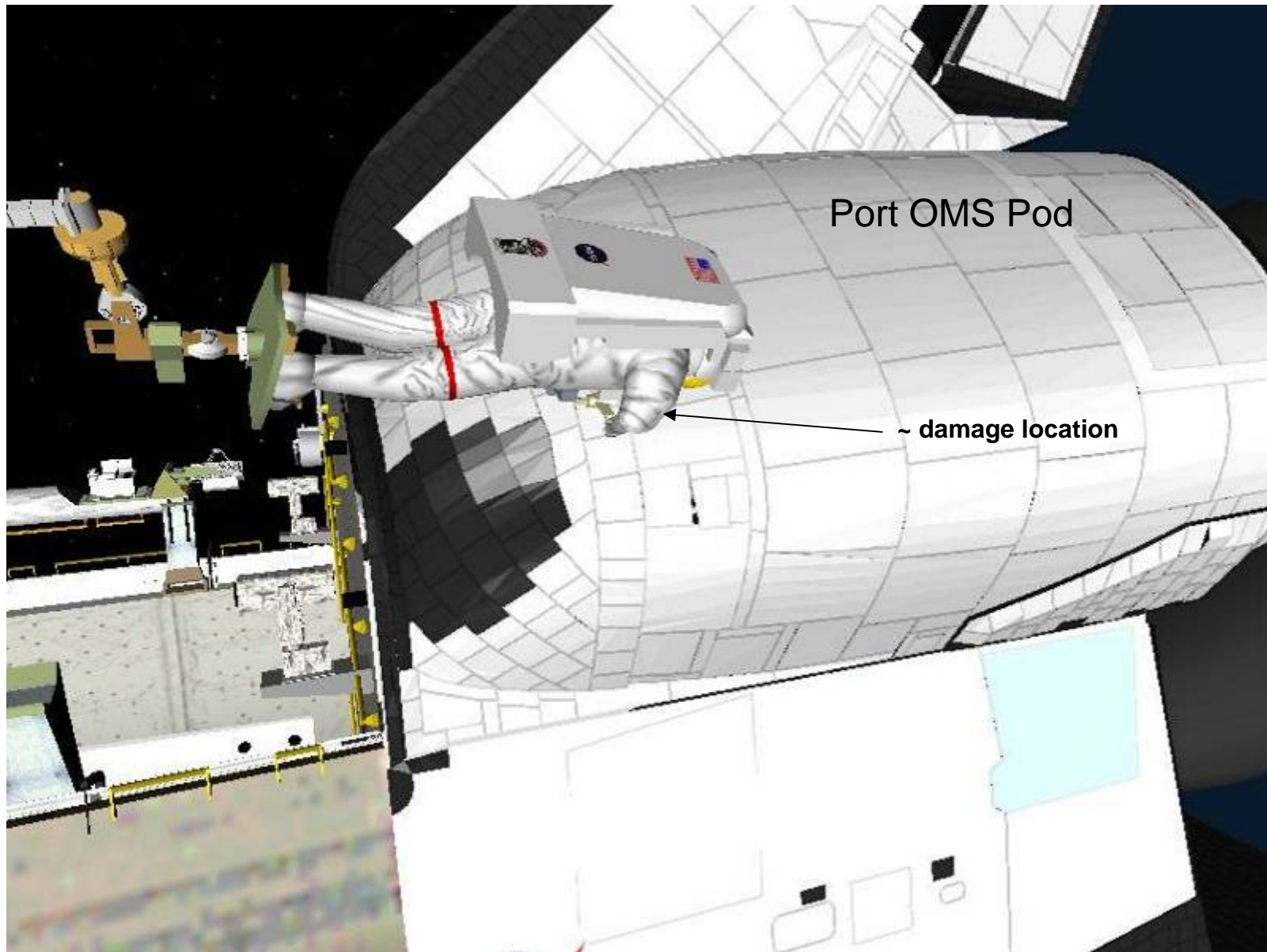




## BLANKET REPAIR HOVER POSITION



## BLANKET REPAIR POSITION



## **REPAIR DETAILS**

1. Patting down adjacent blanket and damaged blanket
2. Stapling blankets
3. Pinning blankets



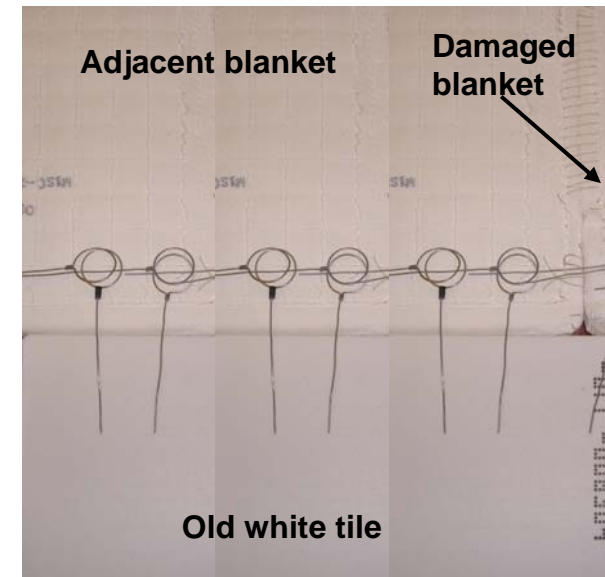
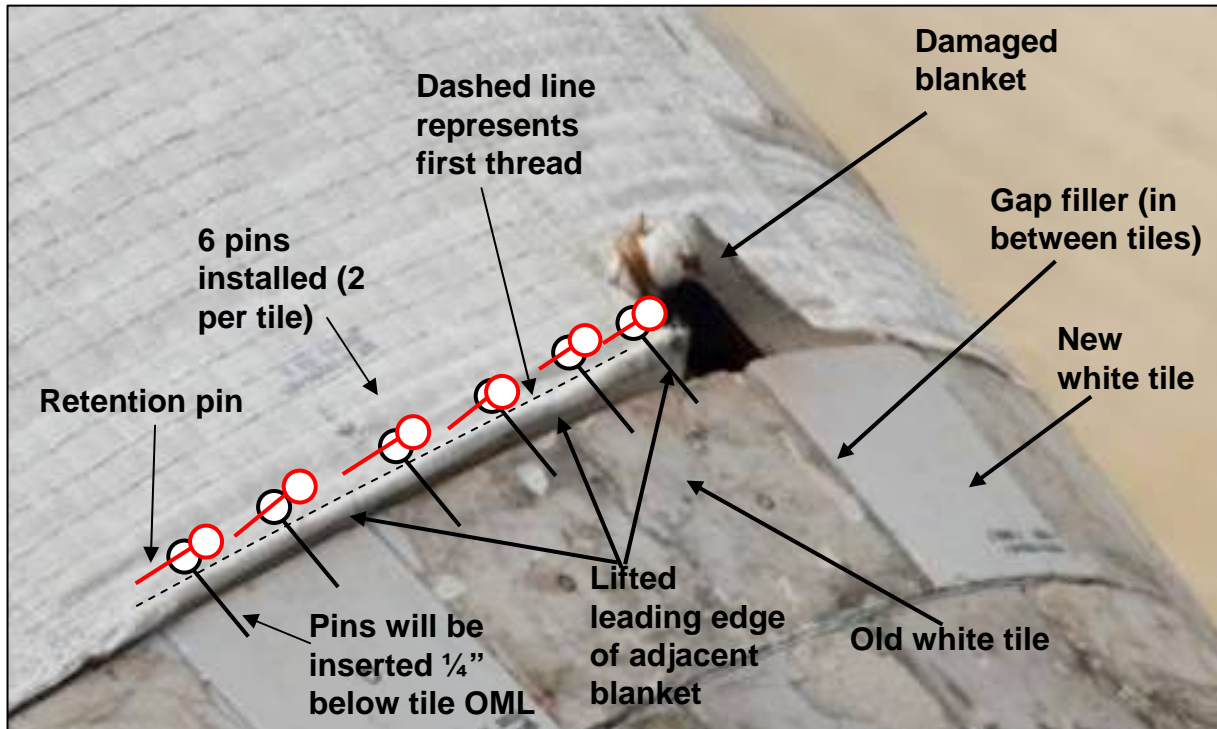
# PART I: ADJACENT BLANKET PAT DOWN & PINNING

## Prime Technique

1. Use gloved hand to pat lifted leading edge on adjacent blanket down flush or sub-flush to tile OML (TPS scraper can also be used)
2. Memory in blankets should hold them in place after initial pat-down
3. After patting down damaged blanket and stapling, retrieve tile pins from pin caddy as required (do not need to tether to pins):
  - A. Install 6 tile pins (black in picture) from leading edge blanket into white tile (2 pins per tile)
  - B. Pin should enter tile roughly  $\frac{1}{4}$ " below tile OML
  - C. Insert pin into blanket aft of first row of threads; push pin through blanket and tile until just pin loop is visible
  - D. Install retention pins (red in picture) through 6 original pin loops (through loop hole from right to left to tack down original pins)
  - E. Slightly bend pin loops down so that they lay as flat as possible

## Operational Recommendations

1. Don't worry about cracking coating on blankets
2. Be aware of MWS clearances to tile
3. Avoid bending pins prior to inserting into blanket; bent pins are difficult to precisely route and find side of tile
4. If it's too difficult to puncture blanket coating or tile with pin, attempt to hold pin lower on shaft or can use dental tool to get hole started. Can use one finger lower on pin shaft to prevent buckling
5. Once pin is almost fully inserted into tile, a slight bend at base of loop toward blanket will help maintain flush-ness and OML
6. When inserting pin into tile, it should feel smooth (only verification since we can't see it)



## BLANKET PAT DOWN PHOTOS



Pat down lifted blanket with hand



Pat down lifted blanket with hand



Pat down lifted blanket with scraper

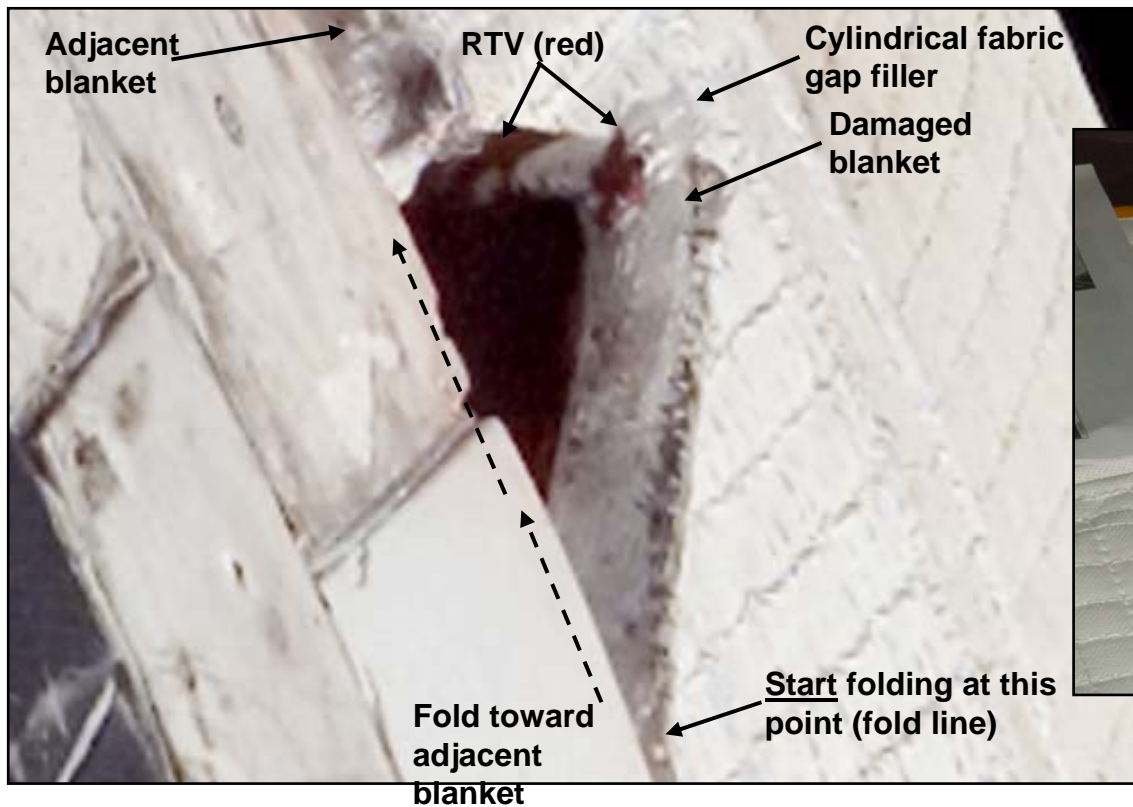
## PART 2: DAMAGED BLANKET PAT DOWN

### Prime Technique

1. Use gloved hand to pat damaged blanket down flush or sub-flush to tile OML (TPS scraper can also be used)
2. Starting from fold line and working toward the lifted/damaged corner, flatten blanket flush or sub-flush to tile OML along tile edge using gloved hand
3. Memory in blankets should hold them in place after initial pat-down
4. Massage blanket into place to close gap

### Operational Recommendations

1. Don't worry about cracking coating on blankets
2. Be aware of MWS clearances to tile



# PART 3: DAMAGED BLANKET STAPLING

## Prime Technique

1. Use tip of RET hook to open gap between blankets in order to create space for lower row of staples (can also use fingers or TPS scraper)

Note: Two rows of staples are needed – one lower and one upper

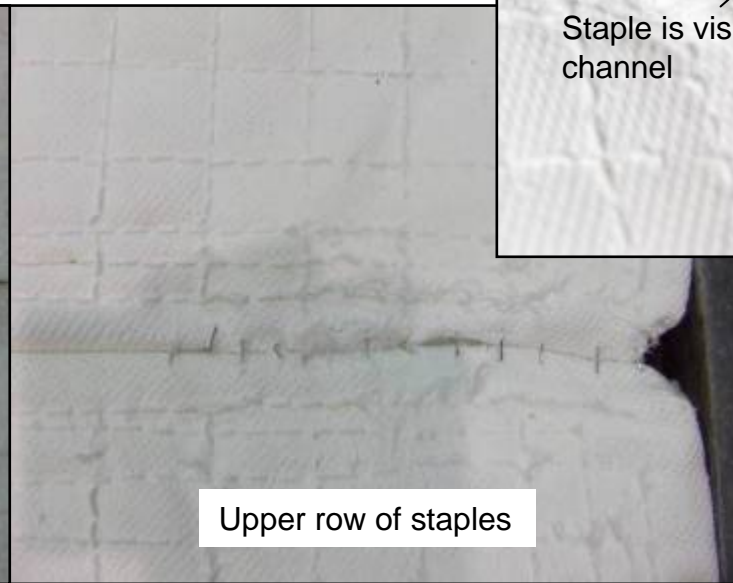
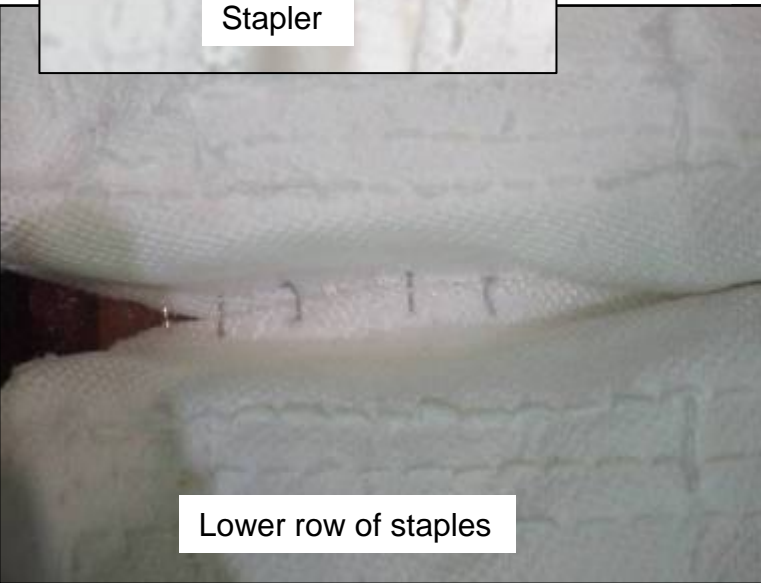
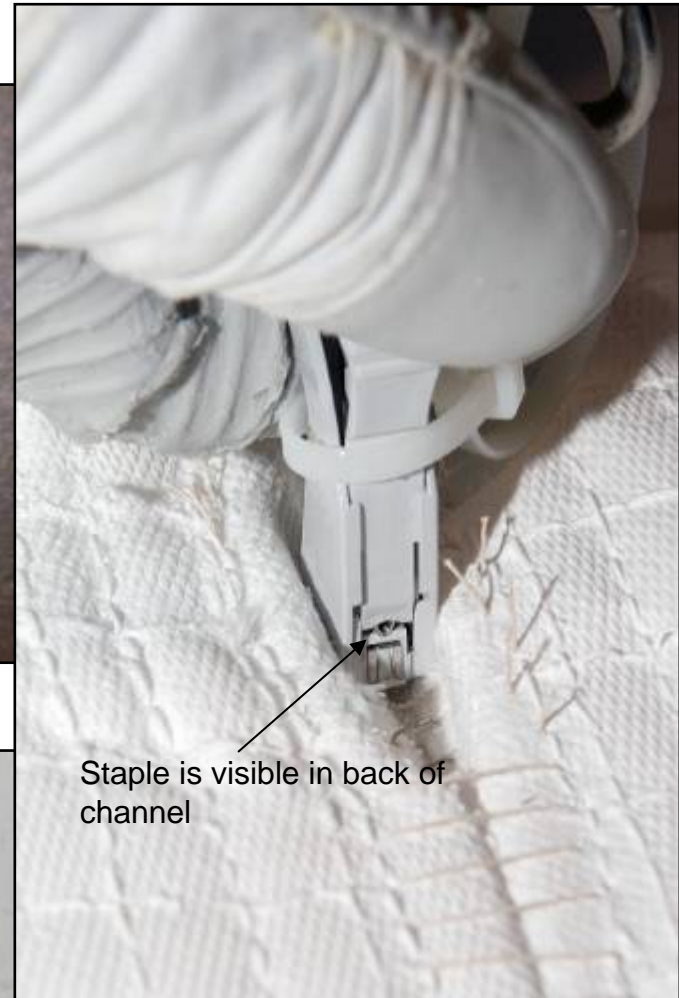
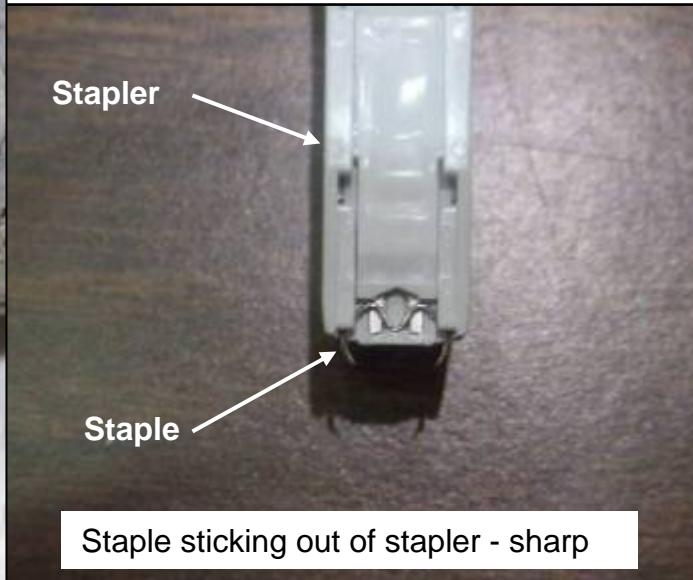
2. Use stapler to attach damaged AFRSI blanket to adjacent blanket.
  - Attempt a lower row of staples near IML, massage blankets to close the gap, and then add an upper row of staples at the OML
  - Start stapling away from tile, and then work toward tile
  - Utilize ~ 3 staples per inch (2 staples in between threads, and 1 staple in line with each thread)
  - --- stitching rows on blankets are ~ 1 inch apart thread to thread
  - There should be a minimum of 8 lower staples and 10 upper staples
  - **WARNING**: If a staple becomes stuck in the glove, do **NOT** attempt to remove the staple; the idea is that it will seal the bladder
  - **OPS CONSTRAINT**: Keep staples at least 1 inch away from fingers
  - **OPS CONSTRAINT**: If a staple is not fully stuck in a blanket, do not attempt to remove

## Operational Recommendations

1. Stapler is an IV medical tool made by 3M
2. Somewhat difficult to see staples entering blanket
3. Ensure staple is visible in back of channel (lever has fully sprung back)
4. Orient stapler lever front to back as required to assist with seeing deployed staples
5. Rock the stapler “left to right” in order to see staple teeth grab each side of the blanket
6. Avoid stapling gloves
7. Be careful when stapling blankets adjacent to tile; avoid cracking good tile coating
8. Once staples are installed, don’t push down hard on top of them; the material begins tearing
9. Staplers will have a zip tie tether point attached to stapler body using kapton tape, and will be carried out to worksite in empty wire tie caddy slots
10. Will carry 4 staplers in wire tie caddy, 1 spare in crewlock bag individually tethered
11. Staples have sharp edges; they can be partially deployed and become an IV inhalation hazard
12. If staple doesn’t release, roll stapler forward

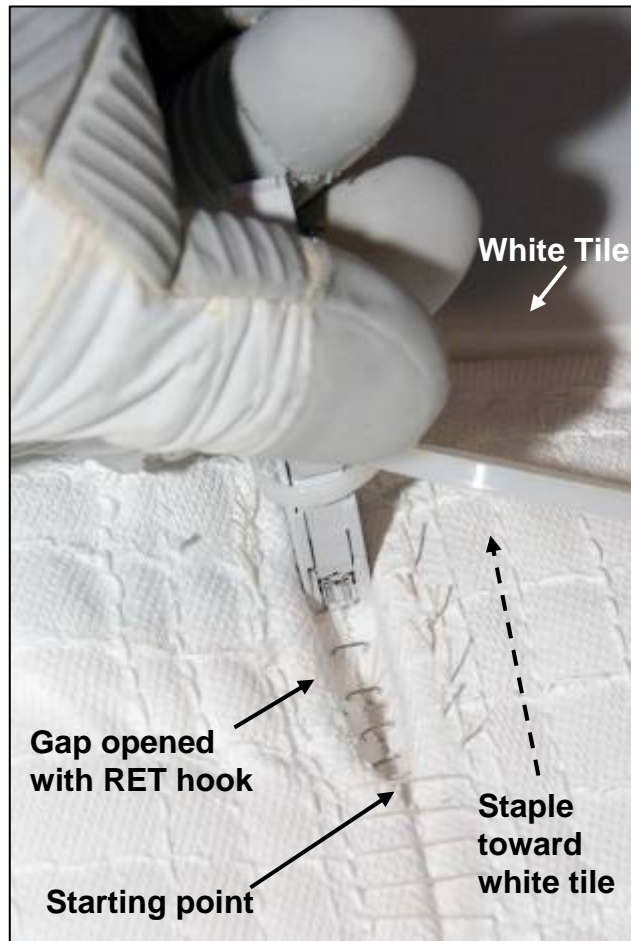


# BLANKET STAPLING PHOTOS



# BLANKET STAPLING PHOTOS

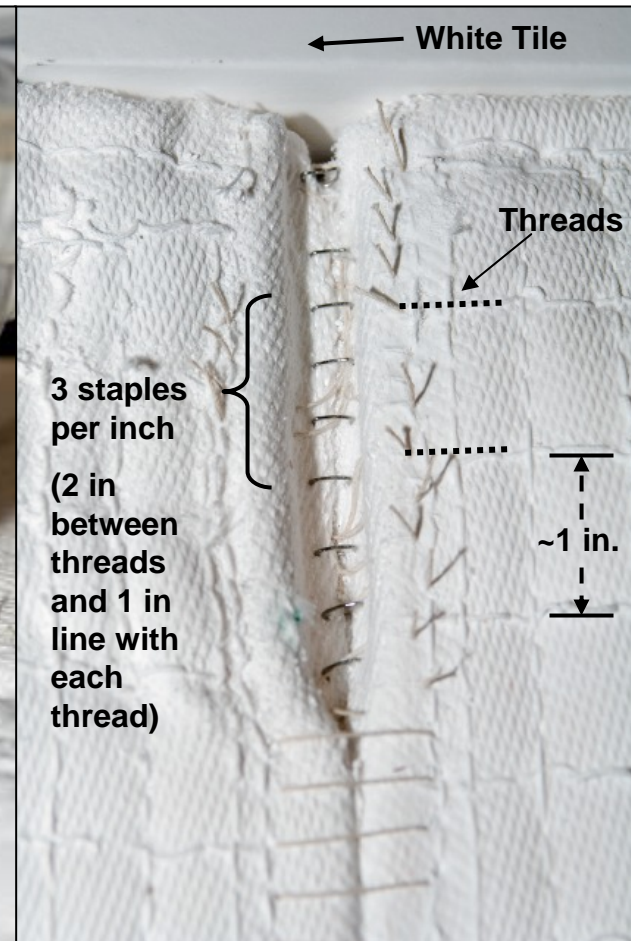
## Inserting Lower Row



Inserting lower row of staples



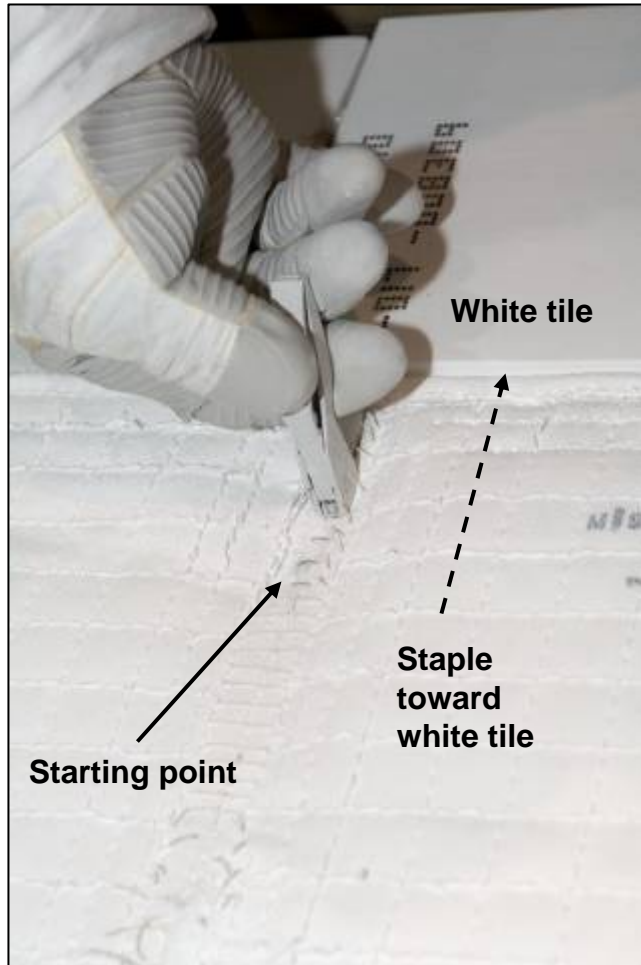
Holding stapler



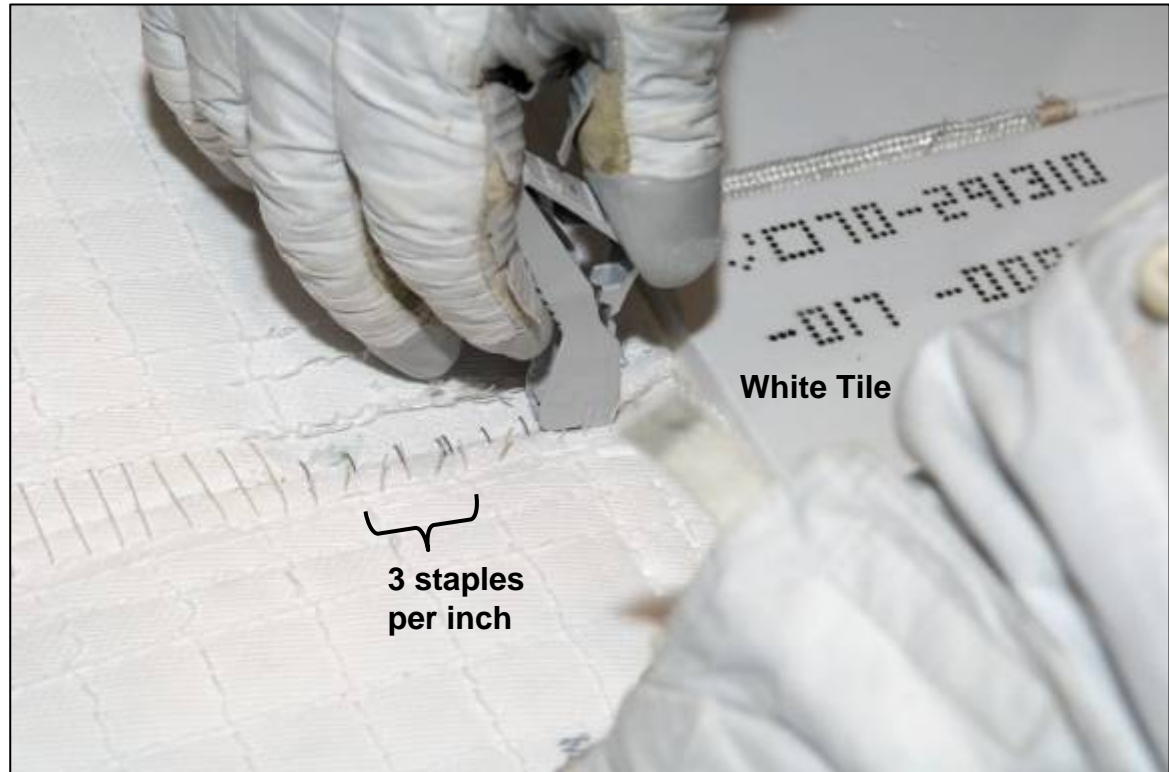
Lower row of staples

# BLANKET STAPLING PHOTOS

## Inserting Upper Row



Inserting upper row of staples



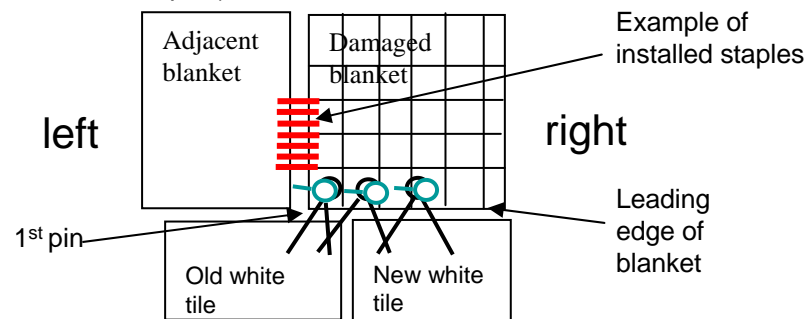
Upper row of staples



# PART 4: DAMAGED BLANKET PINNING

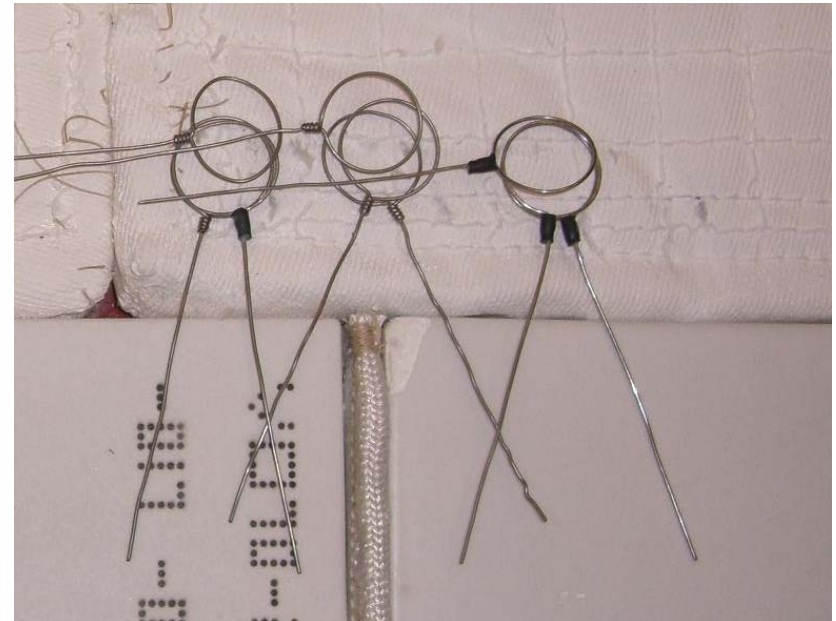
## Prime Technique

1. After staples are installed and adjacent blanket leading edge is pinned into tile, damaged blanket leading edge must be pinned into tile, and then pins must be tacked down using additional retention pins
2. Install a total of 9 tile pins (for damaged blanket only, adjacent blanket requires 12 more) per the following requirements (don't need to tether to pins):
  - A. Starting from left to right, install 1<sup>st</sup> tile pin at 45 degrees to the left with respect to leading edge of blanket (pin should exit lower left hand corner of damaged blanket and enter old (left) white tile)
  - B. Install 2<sup>nd</sup> tile pin at 45 degrees to the right with respect to leading edge of blanket (pin should exit lower right hand corner of damaged blanket and enter old white tile)  
Note: Be sure to overlap the pin loops
  - C. Secure these two pins with a retention pin installed through the pin loops, with the pin oriented with the loop on the right (install right to left) and parallel to the tile sidewall
  - D. Repeat this procedure approximately 1.5 inches to the right, with one pin 45 degrees to the left (entering old white tile) and one pin 45 degrees to the right (entering new white tile)  
Note: Be sure the gap filler is not breached during the pin install
  - E. Repeat once more approximately 1.5 inches to the right
  - F. Pin should enter tile roughly  $\frac{1}{4}$ " below tile OML (deeper is better)
  - G. Tile pin insertion point should be immediately behind first thread (aft of thread); push pin all the way through until just pin loop is visible
  - H. Install 3 retention pins (blue in picture) through 6 original overlapped pin loops (through loop hole from right to left to tack down original pins)



## Operational Recommendations

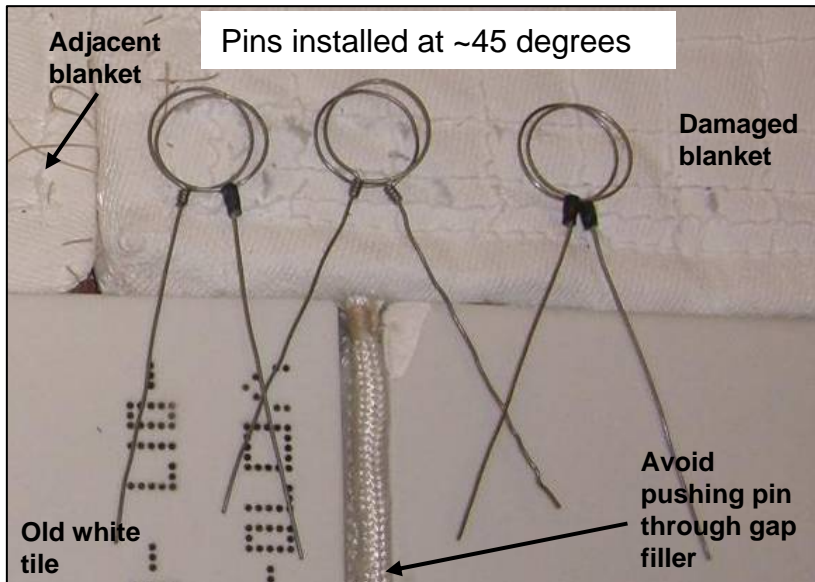
1. May be difficult to crack white tile coating with pin itself. Can use dental tool to push through blanket and into coating on side of tile; creates easy path for pin to follow
2. Must keep pin as straight as possible to ease in insertion into blanket; if pin is bent or twisted, very difficult to guide it to a specific position; use dental tool to assist if necessary.
3. Pins do not have to be tethered, RET hook gets in the way and gets too close to tile
4. Pin FEP tabs will be removed per IV procedure prior to EVA
5. When inserting pin into tile, it should feel smooth (only verification since we can't see it)



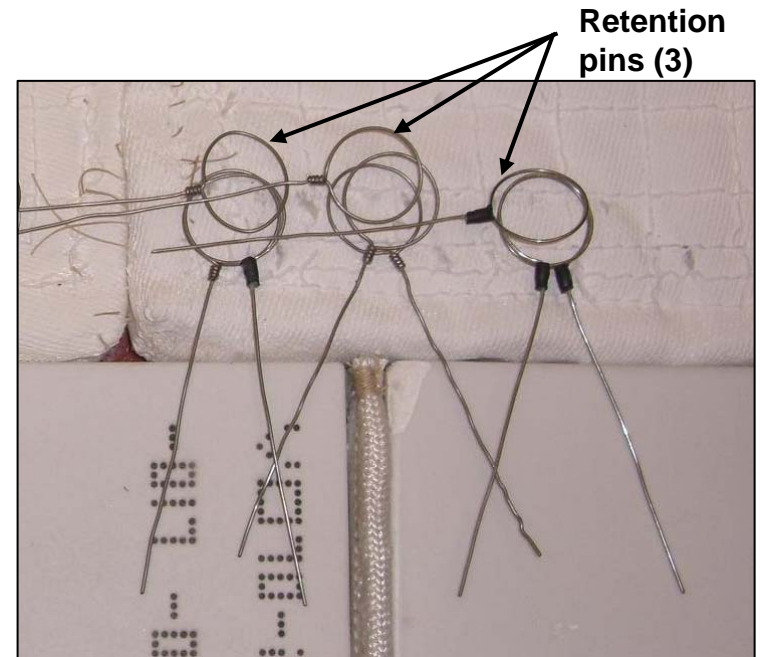
Tile Pin Layout



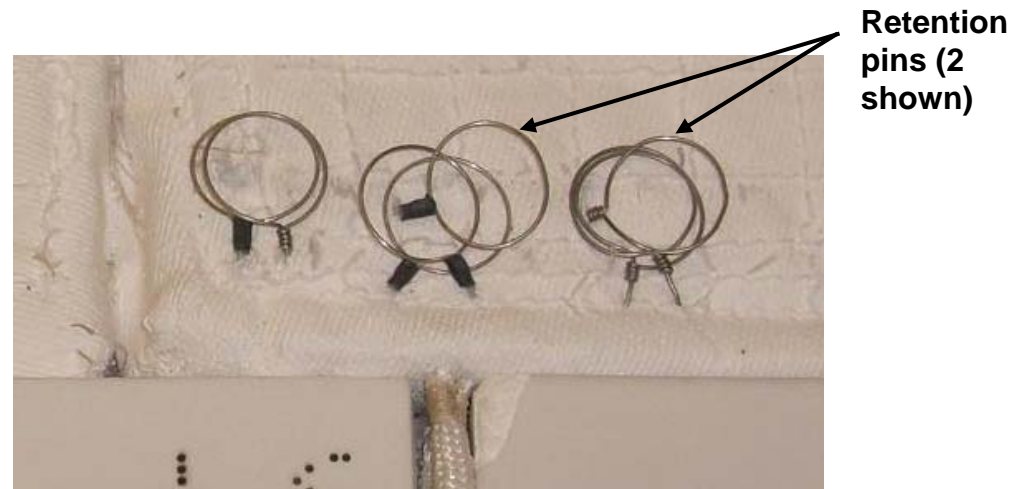
# DAMAGED BLANKET PINNING PHOTOS



Tile Pins Shown (6); not installed yet



Retention Pins (3) shown with Tile Pins (6); not installed yet



Tile Pins (6) Installed In Tile with Retention Pins Installed (2 of 3 shown)

## **TOOL CONFIG INFO**

# HIGH LEVEL TOOL CONFIG INFO

## RMS EV

### MWS

- Rt swingarm: empty
- Inner bayonet fitting: small trash bag (shuttle)

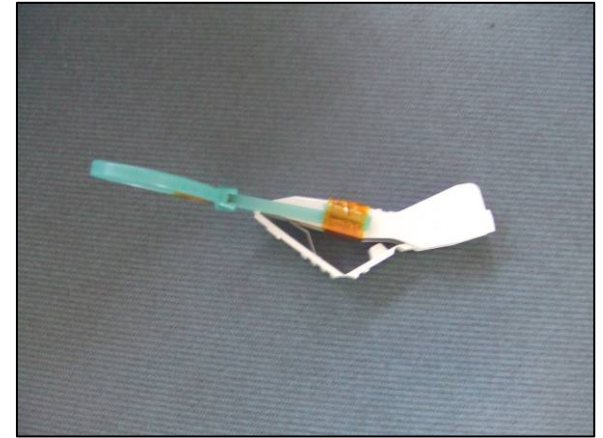
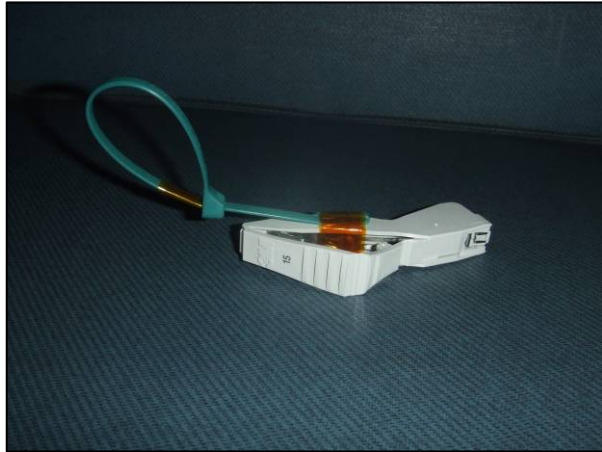
### Crewlock Bag (on BRT):

- NN pliers and compound cutters in ISS caddy
- Dental tool and spare stapler in shuttle caddy
- Digital camera (no flash)
- Modified Wire tie caddy (4 staplers) – inside bayonet; this is only here for egress and translation
- Scraper tool
- Pin cushion in ISS GP caddy (30 pins)

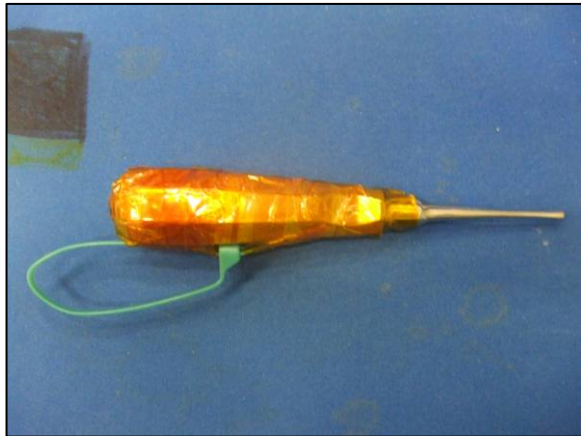
## FF EVA

- PAD and WIF adapter

# HIGH LEVEL TOOL CONFIG INFO



Stapler with kapton tape and zip tie tether point



Dental tool with kapton tape and zip tie tether point



## HIGH LEVEL TOOL CONFIG INFO - CONT

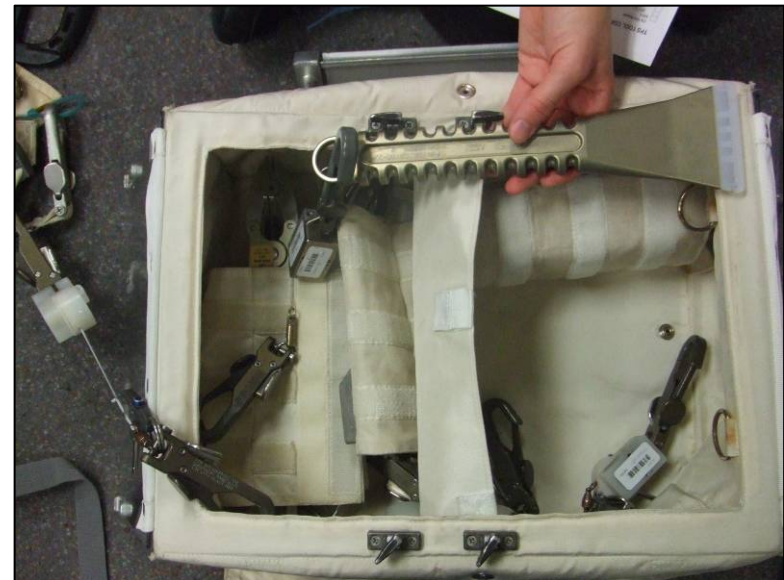
Wire-tie caddy with  
staplers and dental  
tool

Pin cushion  
with tile and  
retention pins

Location for  
digital camera



Crewlock bag with all tools installed (digital camera not shown)



## MSG 053 (15-0431) - EVA TOOL GATHER PROCEDURE

Page 1 of 4

### EVA 3 TOOL GATHER PROCEDURE

#### OBJECTIVE:

Gather and modify tools required for EVA 3 OMS Pod Blanket Repair.

#### DURATION:

TBD.

#### MATERIALS:

- 2 - Zip Ties
- Wire Tie Caddy
- 2 - Adjustable Tethers
- 4 - IV Medical Staplers with tether points (per OSO Tool Prep)

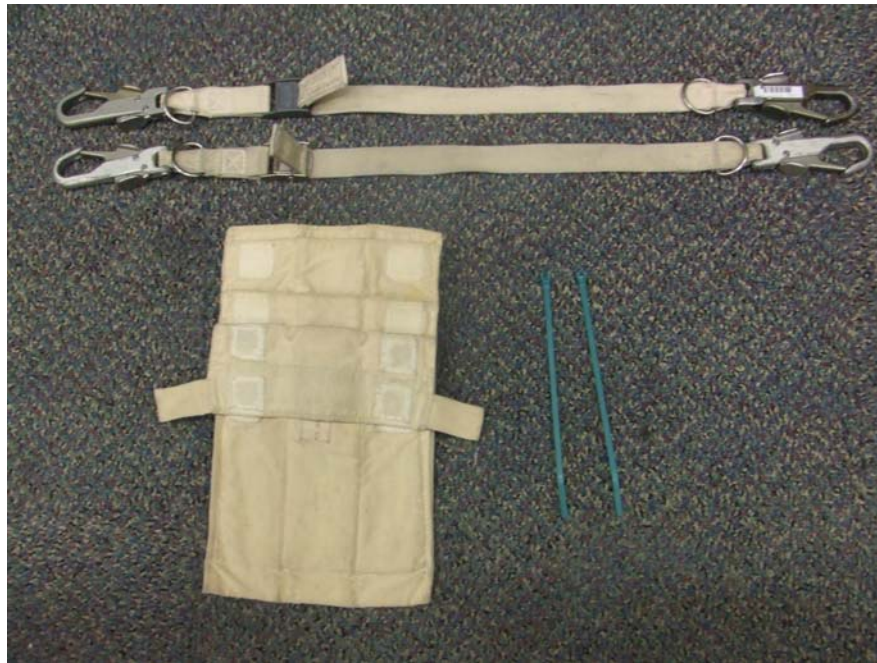
#### TOOLS:

Scissors

### 1. TOOL GATHER

- 1.1 Retrieve the following tools and stow in a crewlock bag (OMS Pod Repair bag):
- 1.2 85' Safety Tether from Shuttle Mid-deck Ceiling Starboard 1 (MCS1)
- 1.3 PAD from A/L100 (Behind Closeout)

### 2. MODIFY WIRE TIE CADDY



**Figure 1 – Items Required for Modified Wire Tie Caddy**

## MSG 053 (15-0431) - EVA TOOL GATHER PROCEDURE

Page 2 of 4

- 2.1 Install adjustable tethers on the wire tie caddy. Flip front flap of wire tie caddy up, lay two adjustable tethers (fully extended) across wire tie caddy. Reference Figure 2.



**Figure 2: Adjustable tether layout**

- 2.2 Fold flap down over AET's. Thread zip tie through pull tab, around both AET's and secure tightly. Trim zip tie tails. Reference Figures 3 & 4.



## MSG 053 (15-0431) - EVA TOOL GATHER PROCEDURE

Page 3 of 4



Figure 3: AET zip tie layout

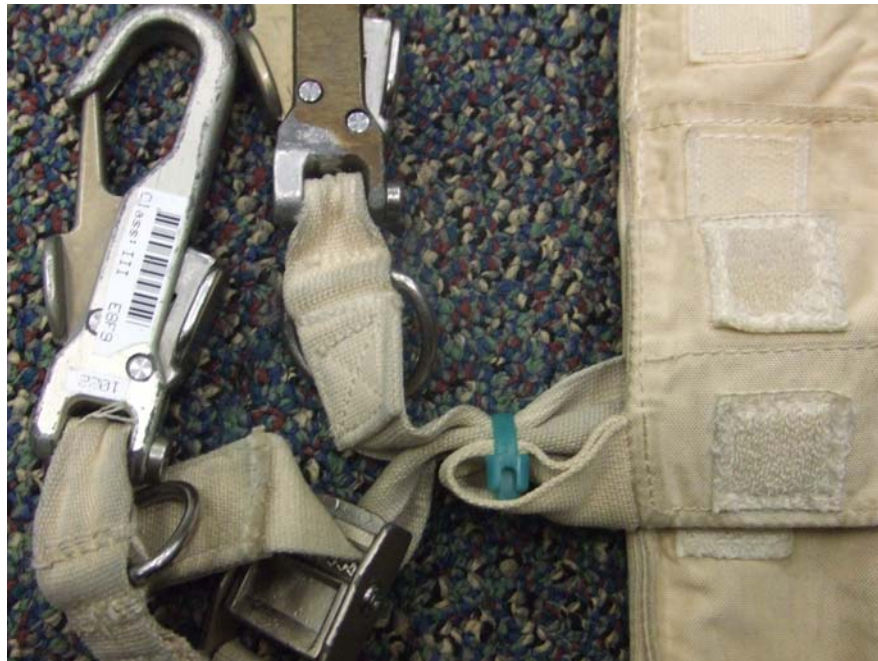


Figure 4: Zip Tie Installed and Trimmed



## MSG 053 (15-0431) - EVA TOOL GATHER PROCEDURE

Page 4 of 4

2.3 Completed caddy. Reference Figure 5.



**Figure 5: Completed built up caddy.**

2.4 Install 1 stapler onto each equipment hook and stow in caddy with staple dispensing end into the caddy. (Note: Alternating stapler orientations may help in stowing the staplers) Reference Figure 6.



**Figure 6: Wire tie caddy with stapler stowed**

(Note: One stapler shown for demonstration purposes. Stow remaining 3 in similar fashion.)

## **MSG 054 (15-0432) - OMS POD BLANKET REPAIR TOOL PREP PROCEDURE**

Page 1 of 7

### OBJECTIVE:

To prepare tools to be taken EVA for OMS Pod Blanket Repair. Four Skin Staplers will be prepared to go out EVA by adding EVA tether points. (the fifth will be prepared and used for training).

### LOCATION:

Crew Preference

### DURATION:

1 hour 30 minutes

### PARTS AND MATERIALS:

Zip Ties

1" Kapton Tape

Pin Cushion; (from EVA Overlay Tile Repair Kit)

Wire Tie Caddy Assy

ISS General Purpose Caddy (two)

Overlay Pins (31); (from EVA Overlay Tile Repair Kit)

IV Medical Stapler "Skin Stapler"; (5 staplers in AMP, Surgical Supply– 2)

Dental Elevator; (in AMP, Dental – 4)

### TOOLS:

DCS 760 Camera

Drawer 5:

8-1/4" Long, 2" Cut Scissors

### REFERENCED PROCEDURE:

2.201 760 NOMINAL SETUP - WITH FLASH

1. OVERLAY PIN PREPERATION

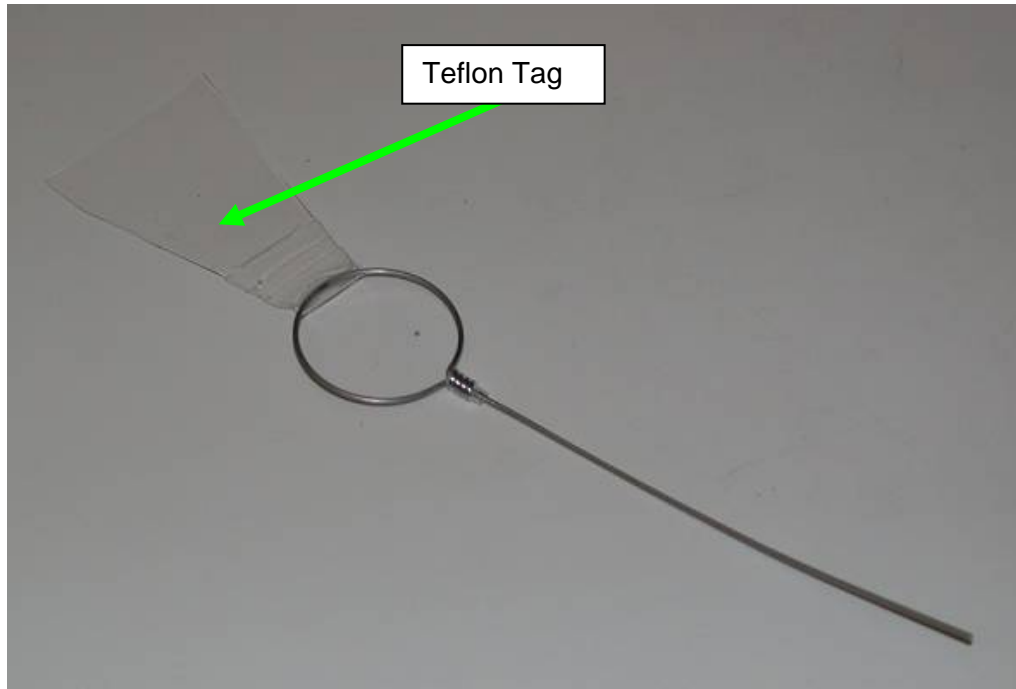


Figure 1. - Overlay Pin with Teflon Tag.

- 1.1 Remove Teflon Tag from Overlay Pins (31). (8-1/4" Long, 2" Cut Scissors)  
Refer to Figure 1.
- 1.2 Install Pin Cushion into ISS General Purpose Caddy.
- 1.3 Insert as many pins as possible into Pin Cushion.  
Save one pin for use in practice session. Temp stow.  
**ISS ↓ MCC-H:** Number of Overlay Pins in Pin Cushion.
- 1.4 Perform DCS 760 Camera setup {2.201 760 NOMINAL SETUP - WITH FLASH}, all (SODF: ISS PTV: KODAK 760), then:  
Photo-document final configuration (DCS 760 Camera).



Figure 2. - Dental Tool.

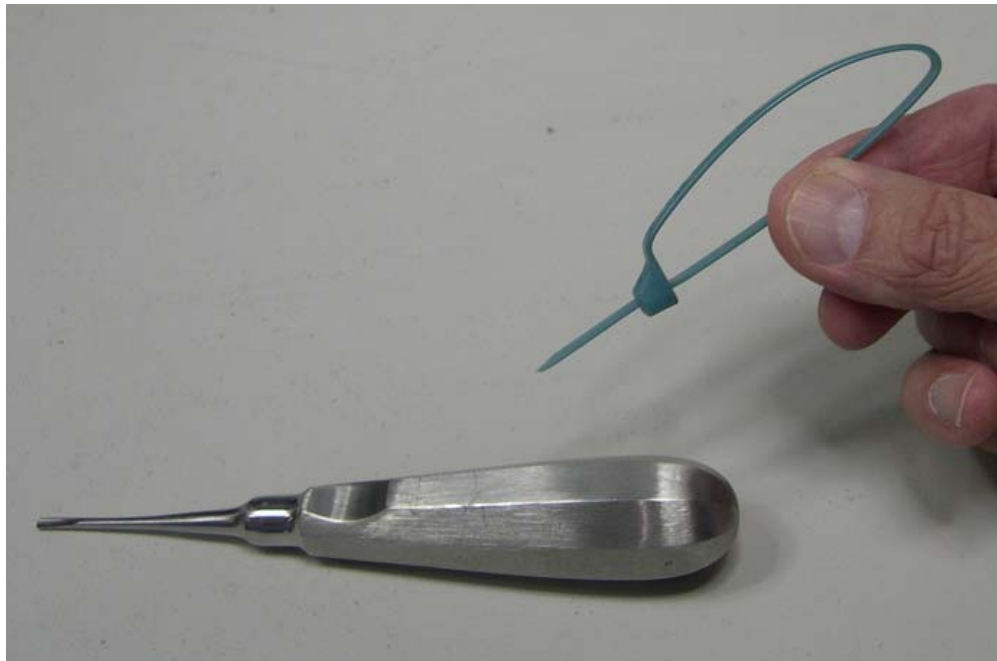


Figure 3. - Zip Tie Configuration. Dental Tool shown for scale.

## **2. DENTAL TOOL PREPARATION**

- 2.1 Configure Zip Tie as shown. (8-1/4" Long, 2" Cut Scissors)  
Refer To Figure 3.

## MSG 054 (15-0432) - OMS POD BLANKET REPAIR TOOL PREP PROCEDURE

Page 4 of 7

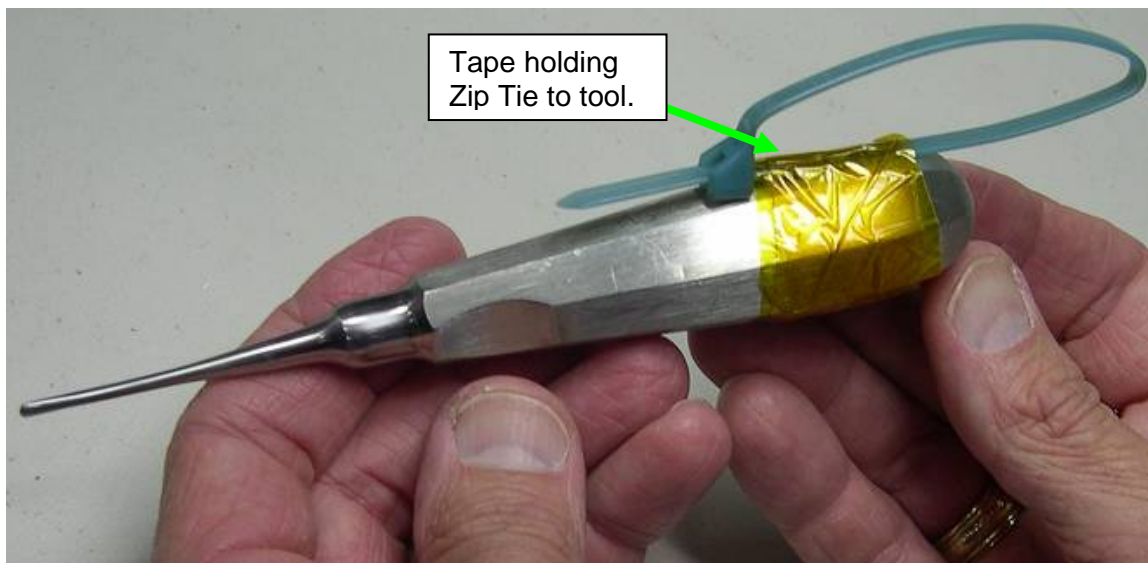


Figure 4. - Dental Tool with Zip Tie attached.

- 2.2 Tape Zip Tie to Dental Tool as shown. (1" Kapton Tape; 8-1/4" Long, 2" Cut Scissors)  
Refer To Figure 4.

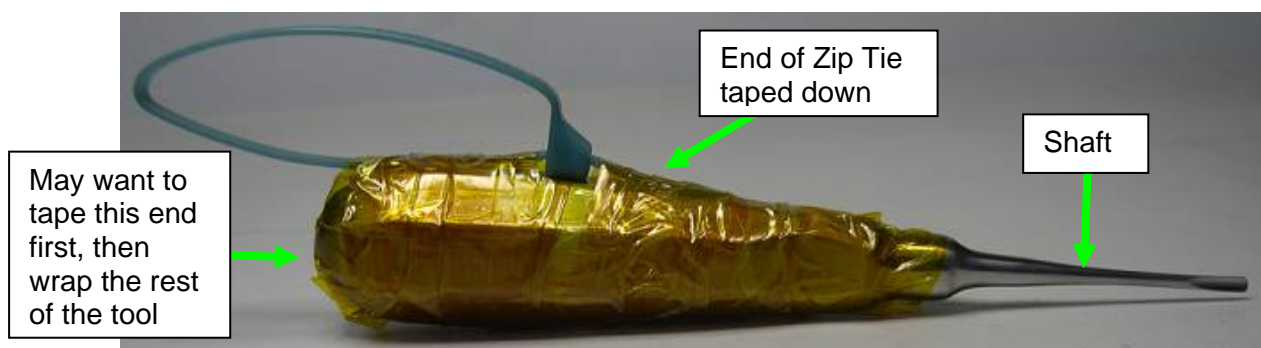


Figure 5. - Dental Tool in Final Configuration.

- 2.3 Cover all non-shaft surfaces of Dental Tool with Kapton Tape as shown. (1" Kapton Tape; 8-1/4" Long, 2" Cut Scissors)  
Refer to Figure 5.
- 2.4 Photo-document final configuration (DCS 760 Camera).
- 2.5 Insert Dental Tool into ISS General Purpose Caddy.



## MSG 054 (15-0432) - OMS POD BLANKET REPAIR TOOL PREP PROCEDURE

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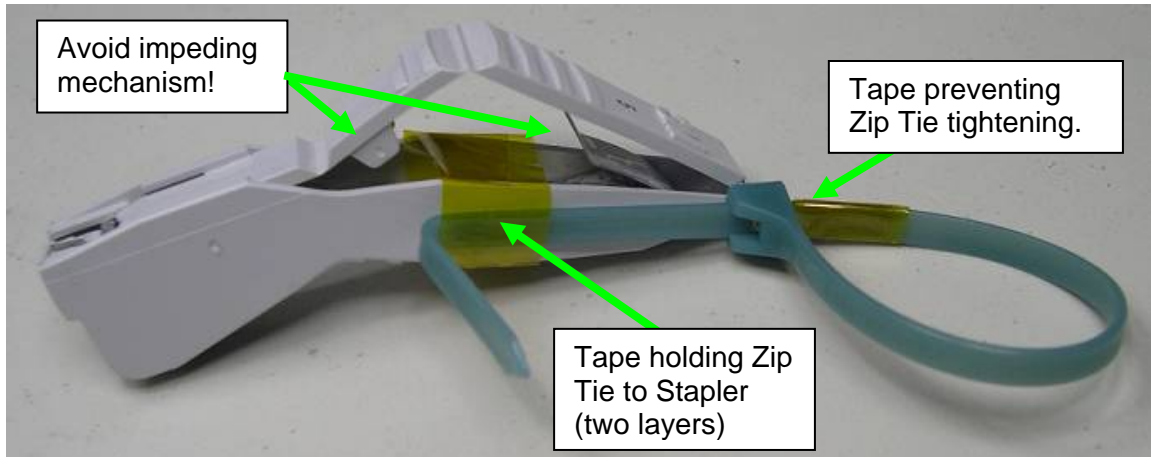


Figure 6. - Stapler and Zip Tie. Shown in configuration after Step 3.2.

### 3. ADD TETHER POINT TO STAPLER

- 3.1 Create ~1.5" diameter loop with Zip Tie and tape Zip Tie as shown to prevent further tightening of Zip Tie. (1" Kapton Tape, 8-1/4" Long, 2" Cut Scissors)

Refer To figure 6.

#### **CAUTION**

It is VERY important that the Kapton tape not impede the Stapler mechanism. Crew should take whatever precautions necessary to ensure stapler will function properly.

#### NOTE

Kapton shown is 1/2" wide. It may be necessary to cut the 1" Kapton into ~1/2" wide strips in order to easily feed through the stapler and not impinge stapler function.

- 3.2 Configure Zip Tie to stapler as shown. (1" Kapton Tape; 8-1/4" Long, 2" Cut Scissors)

Refer To Figure 6.



Figure 7. - Stapler and Zip Tie showing folded Zip Tie end taped in place.

- 3.3 Fold end of Zip Tie back onto itself and tape in place as shown. (1" Kapton Tape; 8-1/4 Long, 2" Cut Scissors)  
Refer to Figure 7.

**NOTE**

To prevent staples snagging on caddies, gloves, or suits while in transit the staples should be covered with the non-adhesive side of Kapton Tape (to prevent the tape from removing a staple). It will be held in place with the courtesy tab.



Figure 8. - Stapler showing location for Kapton Tape.

## MSG 054 (15-0432) - OMS POD BLANKET REPAIR TOOL PREP PROCEDURE

Page 7 of 7

- 3.4 Place a small piece of Kapton Tape gently over the staple as shown. Verify adhesive side facing out. Refer to Figure 8.

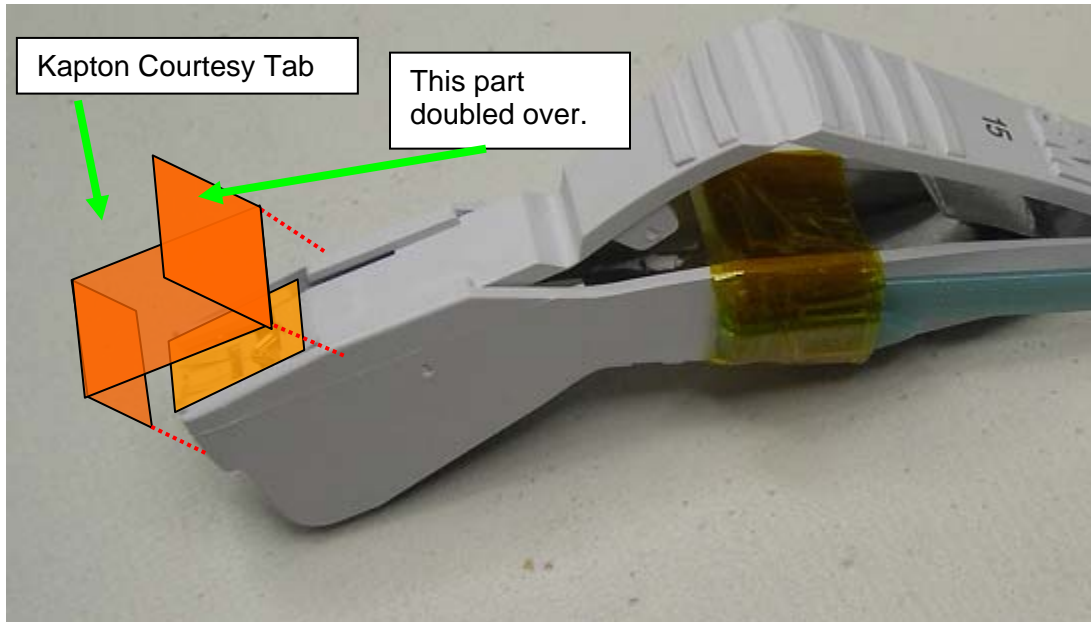


Figure 9. - Stapler with Teflon Tape showing location of Kapton Courtesy Tab.

- 3.5 Apply Kapton Tape with one end doubled onto itself forming a Courtesy Tab as shown. Refer to Figure 9.
- 3.6 Repeat steps 3.1 through 3.5 for all five Staplers.
- 3.7 Photo-document final configuration (DCS 760 Camera).
- 3.8 Stow four Staplers in emptied Wire Tie Caddy. Stow fifth Stapler for use in practice session.

#### 4. STOWING PREPARED TOOLS

- 4.1 Retrieve empty crew lock bag.
- 4.2 Stow all prepared tools in Crew lock bag per OMS EVA 3 Tool Config.

#### 5. POST MAINTENANCE

ISS ↓ MCC-H: task completion



# MSG 055 (15-0433) - OMS POD BLANKET REPAIR PRACTICE SESSION PROCEDURE

Page 1 of 5

## OBJECTIVE:

To construct a platform to simulate OMS Pod TPS Blanket material and to practice stapling method and get a general feel for Pin insertion.

## LOCATION:

Crew Preference

## DURATION:

1 hour

## PARTS AND MATERIALS:

White Shuttle seat headrests (in Bones Bag)

2" Glass Cloth Tape (NOD1O4\_B1)

EMU Comfort Gloves (two)

EMU Suit Gloves (two)

Velcro Squares (Shuttle IFM Tool Locker, Tray 1)

Overlay pins

IV Medical Stapler

## TOOLS:

### ISS IVA Toolbox:

Drawer 5:

8-1/4" Long, 2" Cut Scissors

## 1. OMS POD REPAIR PRACTICE PLATFORM FABRICATION

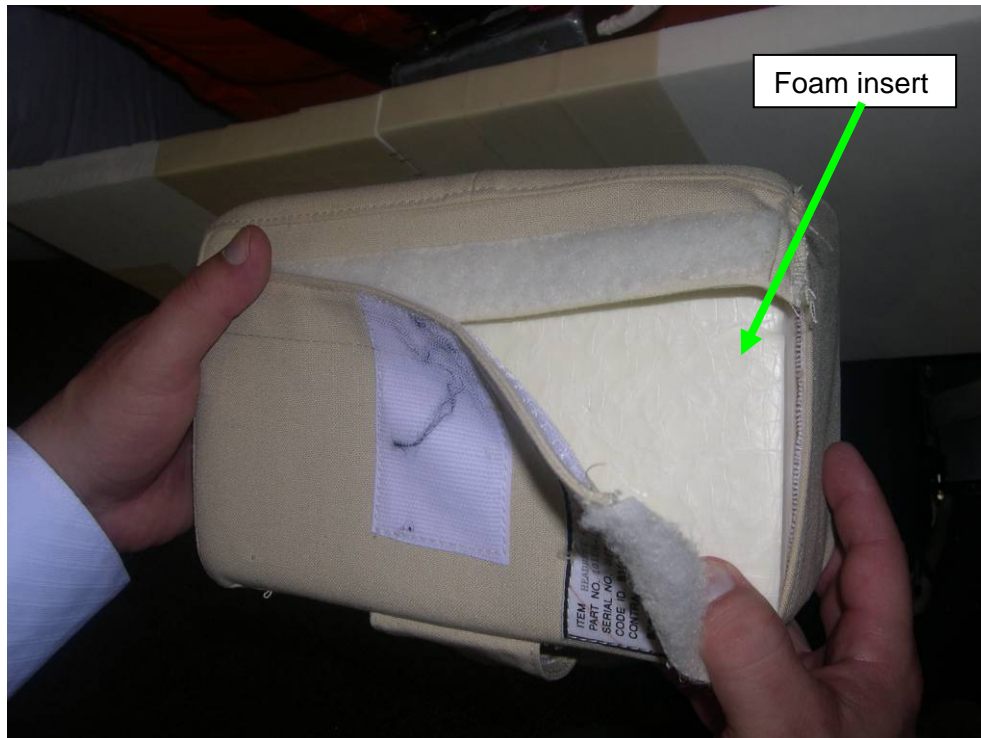


Figure 1. White Shuttle Seat Headrests.

**MSG 055 (15-0433) - OMS POD BLANKET REPAIR PRACTICE SESSION  
PROCEDURE**

Page 2 of 5

- 1.1 Obtain two White Shuttle Seat Headrests from the Bones Bag.
- 1.2 Remove foam from headrest covers. Cover is held closed by Velcro. If necessary cut away headrest cover. (8-1/4" Long, 2" Cut Scissors)  
Refer to Figure 1.



Figure 2. Wrapping foam inserts in 2" Glass Cloth Tape.

- 1.3 Wrap each foam insert with 2" Glass Cloth Tape.  
Pull tape tight but try not to excessively round off edges. Use two layers of tape. (2" Glass Cloth Tape; 8-1/4" Long, 2" Cut Scissors)  
Refer to Figure 2.

# MSG 055 (15-0433) - OMS POD BLANKET REPAIR PRACTICE SESSION PROCEDURE

Page 3 of 5



Figure 3. Back side of OMS Pod Blanket Practice Platform.

- 1.4 Turn the foam over and tape the two pieces together, creating the “OMS Pod Blanket Practice Platform”. Use 2” Glass Cloth tape on one side only.  
Refer to Figure 3.

- 1.5 Attach Velcro Squares to the back of the OMS Pod Blanket Practice Platform.  
Apply Velcro to enable crew to practice at the most convenient location.  
Platform can be attached to Lockers, IFM Tablecloth, ISS rack face, or other location as desired.

## 2. PRACTICE USING STAPLER AND PINS

### NOTE:

1. The OMS Pod Blanket Practice Platform is much stiffer than the thermal blanket on the OMS POD. The purpose of the test is to simulate the technique required to set the staples in the thermal blanket.
2. The objective of the following step is to get the feel for pushing pins through the surface.
3. Donning EMU gloves is not required, but is permitted if crew prefers.

**MSG 055 (15-0433) - OMS POD BLANKET REPAIR PRACTICE SESSION  
PROCEDURE**

Page 4 of 5

- 2.1 If crew Preferred:  
Doff hand jewelry.  
Don EMU Comfort Gloves.  
Don EMU Suit Gloves.



Figure 4. Close-up of staples in Practice Platform.

**NOTE:**

Use only one Skin Stapler for OMS Pod Blanket Repair Practice Session.

- 2.2 Practice stapling the front side of the Practice Platform together.  
Refer to EVA procedure "Repair Briefing Package", but only perform the steps to staple top (exposed) edge of foam in Practice Platform.  
Refer to Figure 4.
- 2.3 Practice pushing Overlay Pins into Practice Platform.

**MSG 055 (15-0433) - OMS POD BLANKET REPAIR PRACTICE SESSION  
PROCEDURE**

Page 5 of 5

- 2.4 If Applicable:
  - Doff EMU Suit Gloves.
  - Doff EMU Comfort Gloves.
- 2.5 When complete, stow Tools and materials.
  - Stow OMS Pod Blanket Practice Platform in Bones Bag.

## MSG 056 (15-0434) - SPACE TO GROUND EVA 3 TAGUP OUTLINE

Page 1 of 1

### EVA Blanket Repair S/G Tagup

#### ☐ Big Picture:

- Secure leading edge & tie blankets together
- Photo doc
- Press blanket in place
- Staple
- Pin
- Photo doc

#### ☐ Tools:

- Description
- Prep
- Training
- Technique & safety considerations

#### ☐ Detail Procedure Review

- SRMS setup
- SRMS maneuver & GCA
- Repair details
- SRMS de-config

#### ☐ Questions?

## PAGE 1 OF 2

## MSG057 (15-0435) – UPDATED EVA 3 INHIBIT PAD

PAGE 2 OF 2

### Ground

#### Ground Radar

MCC-H 1. √TOPO console, ground radar restrictions in place for EVA

### USOS

#### LAB Window

IV If EV crew < 10 ft from window, close window shutter

#### INHIBITS IF SOLAR ARRAY TASKS PERFORMED

##### S-BAND (SASA) Antenna

- MCC-H 1. S1 SASA – Powered down
- BGA** 2. 2B BGA angle = 227.8125  
3. 2B Motor State – OFF  
4. Latch 2 Pin Status – Latched  
5. 2B SSU - shunted

#### STBD TRRJ (If translating to S3)

- MCC-H 1. √DLA (1) – LOCKED  
2. RPCM S11A\_C RPC 1 – Open, Close Cmd Inhibit  
S1-1 (Zenith RJMC Ops Pwr)  
3. RPCM S12B\_B RPC 11 – Open, Close Cmd Inhibit  
S1-2 (Nadir RJMC Ops Pwr)

#### PCU

- MCC-H 1. √PCUs (two) operational in discharge mode and one of the following:  
A. CCS PCU EVA Hazard Control enabled  
B. No more than two arrays unshunted  
C. No more than two arrays pointed < 90 from velocity vector  
OR  
2. One or no PCUs operational in discharge mode and one of the following:  
A. No more than two arrays unshunted  
B. No more than two arrays pointed < 90 from velocity vector

### RSOS

#### SM Antennas

- MCC-M 1. Global Timing Sys 1(400.1 MHz) [GTS] – Deactivate  
IV 2. ARISS (HAM radio) – Deactivate or VHF (144-146 MHz)  
TX only

#### FGB Antennas


- IV 1. ARISS (HAM radio) – Deactivate or VHF (144-146 MHz)  
TX only



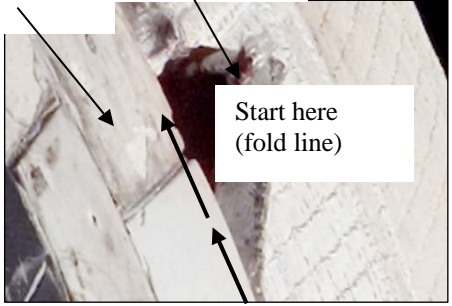
## MSG059 (15-0438) - Detailed EVA Repair Procedure

TASK TIME (PET TIME) HR : MIN	IV/SRMS	EV1 (FF)	EV2 (SRMS)
00:05		<u>OMS POD SETUP</u> <ol style="list-style-type: none"> <li>1. Translate to ESP2 WIF 03 (stbd edge)</li> <li>2. Install PAD/WIF adapter on WIF extender [6,A]</li> <li>3. Temp stow crewlock bag on WIF extender</li> <li>4. Relocate WIF extender to Lab nadir</li> <li>5. GCA SRMS for PAD install</li> <li>6. √PAD knob in SD; softdock PAD onto SRMS striker bar</li> <li>7. Rotate PAD knob to CL; then lock J-lock on knob</li> <li>8. Retrieve vent tools crewlock bag</li> </ol>	<u>OMS POD REPAIR</u> <ol style="list-style-type: none"> <li>1. Translate to APFR/ingress aid on S0 aft/stbd wedge face S0-07</li> <li>2. Temp stow crewlock bag on APFR</li> <li>3. Stow APFR on BRT</li> <li>4. Translate to airlock; temp stow ingress aid in airlock</li> <li>5. Translate to Lab nadir</li> <li>6. GCA SRMS for APFR install</li> <li>7. Install APFR in WIF extender [12, OO, F, 6]</li> <li>8. Retrieve crewlock bag from APFR; stow on BRT</li> <li>9. Extend WIF extender to 7</li> <li>10. GCA SRMS for ingress</li> <li>11. Ingress APFR</li> <li>12. Induce light loads into SRMS/WIF extender; assess dynamics</li> </ol> <div style="border: 1px solid black; padding: 10px; margin-top: 10px;"> <p style="text-align: center;"><u>CAUTION</u></p> <ol style="list-style-type: none"> <li>1. Reduce input loads if the load limiter actuates</li> <li>2. Do not place hands on the active WIF when pitching the WIF extender's pitch fitting to avoid a possible pinch point</li> <li>3. The crew shall verify all WIF extender latch mechanisms are locked prior to use or stowage</li> <li>4. Do not retract/extend or reposition the WIF extender when the installed APFR is being used by another crewmember to prevent a possible pinch point hazard</li> </ol> </div>

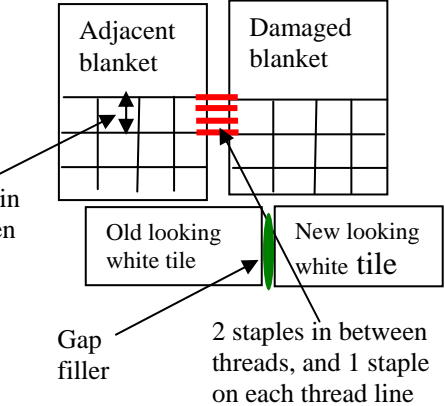

## MSG059 (15-0438) - Detailed EVA Repair Procedure

TASK TIME (PET TIME) HR : MIN	IV/SRMS	EV1 (FF)	EV2 (SRMS)
	 <p data-bbox="344 656 611 716"><u>Lifted leading edge on adjacent blanket</u></p>		<p data-bbox="1346 298 1583 326"><u>BLANKET SURVEY</u></p> <p data-bbox="1346 331 1955 448">13. SRMS mnvr to left OMS Pod hold posn; during mnvr relocate camera from C/L bag to swing arm and relocate wire tie caddy to T-bar inner bayonet</p> <p data-bbox="1604 472 1696 500"><u>NOTES</u></p> <ul data-bbox="1388 505 1906 773" style="list-style-type: none"> <li>a. Minor blanket tearing and fraying is expected. Cylindrical gap filler also present and frayed.</li> <li>b. Filler bar is brown felt, covered in red RTV.</li> <li>c. Expect RTV covering blanket underside and Filler Bar/Structure</li> <li>d. Bare structure is green (Koropon-coated).</li> </ul> <p data-bbox="1346 846 1955 1057">14. Report damaged blanket conditions to IV</p> <ul data-bbox="1440 878 1955 1057" style="list-style-type: none"> <li>• Describe condition of top and sides of blanket (frays, tears, exposed batting)</li> <li>• Describe condition inside blanket cavity; look for any protrusions, exposed IML, lifted/torn/stretched filler bar, RTV condition</li> </ul> <p data-bbox="1346 1065 1955 1243">15. Using digital camera, take photos of prime/damaged blanket and adjacent blanket, including gaps and steps if possible (daylight desired but not a requirement – if not daylight, attempt to get photos with helmet light illumination only)</p> <p data-bbox="1346 1252 1850 1279">16. Take photos inside cavity if possible</p> <p data-bbox="1346 1284 1944 1312">17. Verify the area has been scanned with WVS</p>

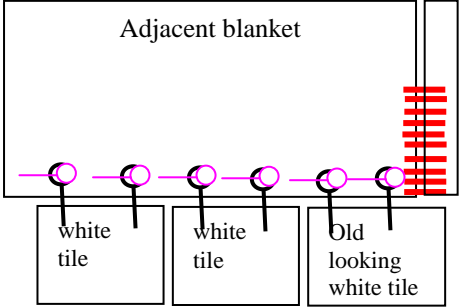
## MSG059 (15-0438) - Detailed EVA Repair Procedure

TASK TIME (PET TIME) HR : MIN	IV/SRMS	EV1 (FF)	EV2 (SRMS)
	<p data-bbox="344 396 638 456"><u>Direction of blanket pat down on damaged cavity</u></p>  <p data-bbox="184 548 302 570">White tiles</p> <p data-bbox="373 516 491 537">Red RTV</p> <p data-bbox="478 667 596 727">Start here (fold line)</p>		<p data-bbox="1346 298 1598 319"><u>BLANKET TUCKING</u></p> <ol style="list-style-type: none"> <li data-bbox="1346 331 1877 386">18. GCA SRMS to blanket left of damaged blanket (adjacent blanket)</li> <li data-bbox="1346 391 1919 505">19. Report adjacent blanket condition to IV               <ol style="list-style-type: none"> <li data-bbox="1436 418 1919 505">a. Describe condition of leading edge, noting whether it appears bonded to the IML/structure or is torn</li> </ol> </li> <li data-bbox="1346 509 1877 597">20. Using digital camera, take photos of adjacent blanket if not completed previously</li> <li data-bbox="1346 602 1898 657">21. Verify the area has been scanned with WVS</li> </ol> <p data-bbox="1612 704 1688 725"><u>NOTE</u></p> <p data-bbox="1346 732 1919 820">There is no TPS concern with using force to push blankets down to compress blanket to tile OML or sub-OML level</p> <ol style="list-style-type: none"> <li data-bbox="1346 878 1940 992">22. Push leading edge of adjacent blanket down flush or sub-flush to tile OML using gloved hand or TPS scraper (massage laterally to close gaps)</li> <li data-bbox="1346 1029 1877 1084">23. GCA as required for damaged blanket access</li> <li data-bbox="1346 1089 1961 1235">24. Starting from fold line and working toward the lifted corner, flatten blanket flush or sub-flush to tile OML using gloved hand or TPS scraper (massage laterally to close gaps and focus on the leading edge)</li> </ol>

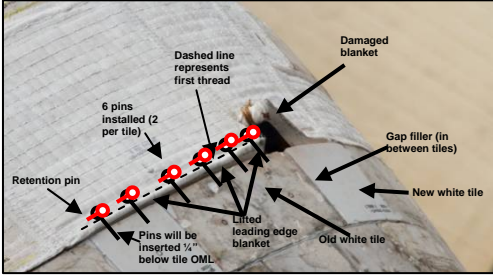
## MSG059 (15-0438) - Detailed EVA Repair Procedure

TASK TIME (PET TIME) HR : MIN	IV/SRMS	EV1 (FF)	EV2 (SRMS)
	<p>Diagrams not to scale</p>  <p>1 inch in between thread</p> <p>Gap filler</p> <p>2 staples in between threads, and 1 staple on each thread line</p>	 <p>Start Here</p> <p>White tile</p>	<p><u>DAMAGED BLANKET STAPLING</u></p> <p>25. Using tip of equipment hook, gently separate edges between damaged and adjacent blankets, enough to allow space for lower row of staples (can also use fingers or TPS scraper)</p> <div data-bbox="1392 553 1948 808" style="border: 1px solid black; padding: 10px;"> <p><u>WARNING</u></p> <p>Partially-deployed or loose staples on fabric pose sharp edge hazard. If a staple becomes lodged in glove, do not pull it out – the bladder will seal around it. Keep finger an inch away from stapler when stapling.</p> </div> <p><u>NOTES</u></p> <ol style="list-style-type: none"> <li>1. There are 15-18 staples per stapler.</li> <li>2. A minimum of 8 lower and 10 upper staples are required to mimic ground testing</li> <li>3. Lever can be toward you or away from you depending body posn and visibility, although away from you seemed to be preferred in ground testing</li> </ol> <p>26. Retrieve stapler from wire tie caddy</p> <p>27. Insert lower row of staples per the following method:</p> <ul style="list-style-type: none"> <li>• For each staple, ensure staple is visible (lever has sprung back)</li> <li>• Place flush on blanket, but pushing down hard is not required/desired</li> </ul>

## MSG059 (15-0438) - Detailed EVA Repair Procedure

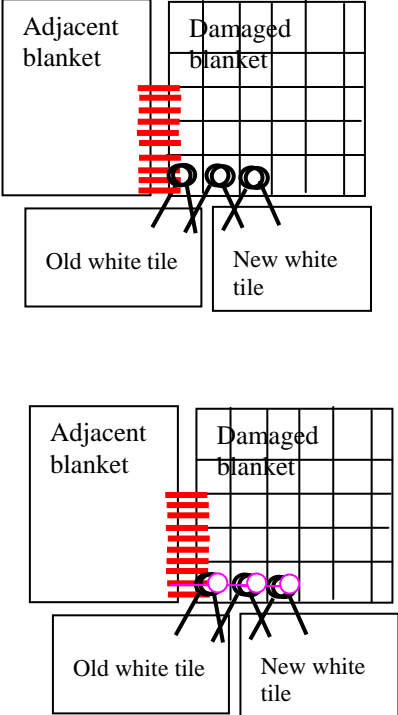
TASK TIME (PET TIME) HR : MIN	IV/SRMS	EV1 (FF)	EV2 (SRMS)
	<p>Diagrams not to scale</p>  <p>The diagram shows a cross-section of the EVA repair area. At the top is a large rectangle labeled 'Adjacent blanket'. Below it, a horizontal line represents the interface. Along this line, there are six circular points representing staples or pins. Below the line, there are three rectangular boxes labeled 'white tile', 'white tile', and 'Old looking white tile'. To the right of the 'Old looking white tile' box, there is a vertical stack of red rectangles representing a damaged area or a specific material layer.</p>		<ul style="list-style-type: none"> <li>• Install first staple at aft most point of torn blanket interface (furthest point away from tile)</li> <li>• Squeeze lever quickly and for full throw (slow lever throw can potentially jam stapler)</li> <li>• Install staples in line with threads and two in between</li> </ul> <p>28. When all lower staples installed, get WVS video of the staples and report number of staples installed (should be at least 8)</p> <p>29. Push blanket OML edges back together</p> <p>30. For outer staples, insert staples in same order/direction and same density as inner staples, starting ~ 4 – 4.5 inches aft of tile (at beginning of damaged area) and working forward</p> <p>31. When all staples installed, get WVS video of the staples and report number of staples installed (should be at least 10)</p> <p><u>ADJACENT BLANKET PINNING</u></p> <div data-bbox="1360 1096 1940 1230" style="border: 1px solid black; padding: 5px;"> <p style="text-align: center;"><b><u>WARNING</u></b></p> <p>Dental tool is a sharp edge hazard. Keep gloved hand away from insertion area.</p> </div> <p>32. GCA SRMS to adjacent blanket access</p> <ul style="list-style-type: none"> <li>• Access three white tiles to left of damaged blanket</li> </ul> <p>33. Retrieve pin caddy from C/L bag and install on MWS T-bar</p> <p>34. Insert 6 tile pins + 6 retention pins into</p>

## MSG059 (15-0438) - Detailed EVA Repair Procedure

TASK TIME (PET TIME) HR : MIN	IV/SRMS	EV1 (FF)	EV2 (SRMS)
		 <p><u>Pins on adjacent blankets</u></p> <p>Insert 1<sup>st</sup> staple away here</p>	<p>adjacent blanket (2 pair per tile) via diagram, per the following:</p> <ul style="list-style-type: none"> <li>• Do not RET, but use caution and as usual report any lost items</li> <li>• When inserting pin into tile, push down on blanket to optimize sub-flush condition of OML</li> <li>• Insert pin into blanket immediately aft of first row of threads on blanket</li> <li>• Pin should be angled to enter the tile ~1/4" below OML</li> <li>• Use quick motions and start pins on blanket at 45 degree angle to help with arm motion as required</li> <li>• After partially inserting pin into tile, bend the loop until parallel with blanket, and then complete insertion with loop flush to surface</li> <li>• After insertion of tile pin, install retention pin through tile pin loop (parallel to tile with the pin loop to the right), using same installation method above if possible. Insert retention pin to the left most inner part of the tile pin loop.</li> <li>• If feeling resistance during insertion, pull pin back and reduce angle of insertion.</li> <li>• If pin won't puncture blanket coating or side of tile coating, use dental tool to start holes first</li> </ul>



## MSG059 (15-0438) - Detailed EVA Repair Procedure

TASK TIME (PET TIME) HR : MIN	IV/SRMS	EV1 (FF)	EV2 (SRMS)
	<p>Diagrams not to scale</p> 	<p><u>OMS POD CLEANUP</u></p> <p>10. Temp stow Vent Tools crewlock bag on WIF</p>	<p><u>DAMAGED CAVITY PIN INSTALL</u></p> <p>35. Insert 6 tile pins + 3 retention pins in same manner as previously described on step 34. In addition perform the following:</p> <ul style="list-style-type: none"> <li>• Work left to right</li> <li>• Avoid inserting pins thru back side of tile</li> <li>• Insert tile pins in x-cross pattern: <ul style="list-style-type: none"> <li>a. First tile pin goes into the old white tile at a 45 degree angle with pin loop to the right.</li> <li>b. The second tile pin goes in at a 45 degree angle with the pin loop to the left, overlapping the first pin loop.</li> </ul> </li> <li>• The retention pin will go through the overlapping loops of the first two pins (parallel to tile with the pin loop to the right). Insert retention pin to the left most inner part of the tile pin loop.</li> <li>• Avoid cigarette gap filler at corner of damaged blanket and adjacent blanket</li> </ul> <p><u>OMS POD CLEANUP</u></p> <p>13. SRMS mnvr to Lab egress position  14. GCA SRMS for APFR egress  15. Egress APFR  16. Tether swap to 85-ft safety tether; verify locked  17. Stow 55-ft safety tether to MWS  18. Temp stow OMS pod repair crewlock bag on APFR  19. Relocate APFR to airlock WIF 11 [6, PP, F, 6]  20. Stow crewlock bag on fuse tether  21. Stow 55-ft safety tether on external airlock D-</p>

## MSG059 (15-0438) - Detailed EVA Repair Procedure

TASK TIME (PET TIME) HR : MIN	IV/SRMS	EV1 (FF)	EV2 (SRMS)
		extender 11. Rotate PAD knob to OP 12. Stow WIF extender/PAD/WIF adapter on BRT 13. Translate to ESP2 stbd side 14. Remove PAD/WIF adapter from WIF extender 15. Stow WIF extender in ESP2 WIF 03 [9,M,1] 16. Translate to airlock 17. Stow PAD on fuse tether 18. Keep WIF adapter on MWS 19. Retrieve 55-ft safety tether from external D-ring 20. Translate to P6-11; fairlead safety tether on Z1-6024 21. GCA SSRMS for APFR install 22. Install WIF Adapter on SSRMS (tether point towards EE) 23. Relocate APFR from P6-11 to WIF adapter [12, PP, F, 6] 24. Tether swap to SSRMS; verify locked 25. Ingres APFR 26. Give SSRMS Go for translation to 2B array	ring (reel unlocked) 22. Retrieve APFR ingress aid 23. Stow ingress aid on APFR (low profile position) 24. Ingress airlock 25. Swap camera, TPS scraper, compound cutter/needle nose plier caddy to 2B tools crewlock bag 26. Retrieve spare adjustable tethers and RETs as desired 27. Translate to P6 HR 5307 via P6 aft/stbd (to avoid SASA KOZ); fairlead safety tether at P6-5309 28. Temp stow crewlock bag on P6 HR 5307 29. Retrieve digital camera and solar array tool

**PDRS Notes for OMS Pod Blanket Repair EVA**Maneuvering

As you know, you will need to watch the EP joint closely during the repair task. You have about **1 foot of aft motion from the expected blanket repair position** until you reach the EP singularity (-7.6 degrees). From the expected blanket repair position, you can move the EV crew 5 ft body-left or body-right without getting into problems with the EP joint. Pitching body-up (w.r.t. his body axis) does not cause severe problems. However, pitching the EV crew member body-down will adversely affect the EP joint angle.

We evaluated worksite mobility using DOUG and in the dome to see roughly how far from the worksite you could go in any **single** translation and rotation before the EP reaches  $-9^\circ$ .

Axis	Distance or angle margin* to EP = $-9^\circ$
EV body translate up (Orb aft)	<b>about 1 ft</b>
EV body translate left & right	> 5 ft
EV body pitch down	about $10^\circ$
EV body pitch up	no EP problem, but watch wrist-to-MPM clearance
EV body roll	about $20^\circ$ in either direction

\* Note that your EV position at the worksite (post GCA) may be slightly different from ours.

The procedure calls out ORB LD mode for the GCA from the Hover to the expected repair position, since the maneuver is only  $-X$  and  $+Z$ . We recommend PL mode for GCAs around the worksite, since EV body-Y is roughly parallel to the OML.

Cameras

In step 8, we suggest the following zoom settings for camera views of the worksite:

- SRMS elbow, zoomed **in** to see the worksite
- CCTV D, zoomed **in full** to see clearance to the worksite
- CCTV A, zoomed **out** to see the entire SRMS
- P1LO, zoomed **in** to see worksite

You can see the clearance between the EV crew member's MWS and tools and the OMS pod OML on Camera D (zoomed in).

RSAD

RSAD has been updated to incorporate the new EVA PL ID 5. We have not added repair targets to RSAD, but you can use the OCAS targets from Spec 94.

## Config Steps

1. The RSAD shortcut to be used for the OMS Pod task is RSAD 4.0 STS-117 OMS Pod Repair

## MSG 060 - SRMS OMS POD BLANKET REPAIR PROCEDURE

2. If desired, targets can be loaded on Spec94 and then utilized in RSAD via **Data > Select Target > SPEC 94 > OK**

In case you need to look, FAO has uplinked the following RSAD files to the STS6(RPOP2) machine in the following directories:

RSAD Shortcut "RSAD 4.0 STS-117 OMS Pod Repair" uplinked to  
C:\Documents and Settings\All Users\Start Menu\Programs\Shuttle  
Apps\RSAD\  
RSAD Shortcut "RSAD 4.0 STS-117 OMS Pod Repair" uplinked to C:\rms\RSAD 4.0\  
RSAD ini file "STS-117 OMS Pod Repair.ini" uplinked to C:\rms\RSAD 4.0\  
RSAD ini file "rsad STS-117 OMS Pod Repair.ini" uplinked to C:\rms\RSAD 4.0\

### DOUG

DOUG targets, a tile state, and a state file (starting config) have been placed into the DOUG directory. The damaged blanket is yellow. EVA PL ID 5 has been added to DOUG so that you can use the RMS sim in DOUG to view the OCAS maneuvers and to look at arm reach capability at the repair work site.

#### Config Steps

1. **File > Load State > OMS pod repair**

√**Options > RMS Targets >** targets from the procedure should appear in the targets window

If no targets appear, contact MCC.

2. **File > Load Tile State > OMS POD Repair tile state.tst**

√A yellow blanket appears on the LEFT OMS Pod.

If no yellow blanket appears, contact MCC.

3. Toggle on/off the EV crewmember via **Toggles > IPAD** and **Toggles > APFR\_RMS**

√**JntSystems > WIF\_EXTENDER >** Clock = 6; Pitch = A; Extend = 7

√**JntSystems > APFR\_RMS >** Clock = 12; Pitch = OO; Roll = F; Yaw = 6;  
*Stan\_Yaw = 6; Stan\_Pitch = 12; Tool\_Yaw = 90 (the items in italics can be ignored)*

In case you need to look, FAO has uplinked the following DOUG files to the STS5(RPOP) machine in the following directories:

DOUG MLC "STS117.mlc" uplinked to C:\DOUG\mlc\  
DOUG Tile State "OMS POD Repair tile state.tst" uplinked to C:\DOUG\states\  
DOUG Targets "rms.STS117" uplinked to C:\DOUG\targets\  
DOUG State "OMS pod repair" uplinked to C:\DOUG\states\STS117\

**OMS POD BLANKET REPAIR****1. SETUP**

Verify with SSRMS operator SSRMS at 2B SAW EVA Setup position

**NOTE**

Assumed SRMS starting posn is SAW Retract Viewing.

MT at WS 3 with SSRMS on PDGF 2 at 2B SAW EVA Setup  
posn (SR: +102.0, SY: 0.0, SP: -90.6, EP: -83.4, WP: -186.7,  
WY: +218.2, WR: +81.7)

A7U

CCTV – config as reqd

MON 1	Elbow
MON 2	B
DNLK	P1LO
DTV	A

SM 94 PDRS CONTROL

√PL ID, ITEM 3: 0

√INIT ID, ITEM 24: 0

**2. MNVR TO PRE-CRADLE**

RHC

RATE – as reqd (VERN within 10 ft)

BRAKES – OFF (tb-OFF)

MODE – SINGLE, ENTER

Mnvr to PRE-CRADLE:

SAW Retract  
ViewingSY –  
Pre-Cradle

SY	SP	EP	WP	WY	WR	
+160.0	+25.0	-25.0	+5.0	0.0	0.0	
0.0						
0.0	+25.0	-25.0	+5.0	0.0	0.0	
X	Y	Z	PITCH	YAW	ROLL	PL ID
-1261	-146	-551	5	2	0	0

BRAKES – ON (tb-ON)

√MODE – not DIRECT

**3. MNVR TO APFR PRE-INSTALL POSITION**

A7U

CCTV – config as reqd

MON 1	Elbow
MON 2	B
DNLK	P1LO
DTV	C

SM 94 PDRS CONTROL

END POS – ITEM 18 -7 9 3 -2 9 -8 0 9 EXEC

ATT – ITEM 21 +9 0 +3 5 9 +1 6 2 EXEC

CMD CK – ITEM 25 EXEC (GOOD)

# MSG 060 - SRMS OMS POD BLANKET REPAIR PROCEDURE

RHC            RATE – VERN (RATE MIN tb-ON)  
                  BRAKES – OFF (tb-OFF)  
                  MODE    – OPR CMD, ENTER (READY lt on)

≡ -----  
 ≡ After PROCEED, if motion no longer apparent but POR is within    ≡  
 ≡ 1 in/1 deg and IN PROG lt - on:    ≡  
 ≡        AUTO SEQ – STOP    ≡  
 ≡ -----

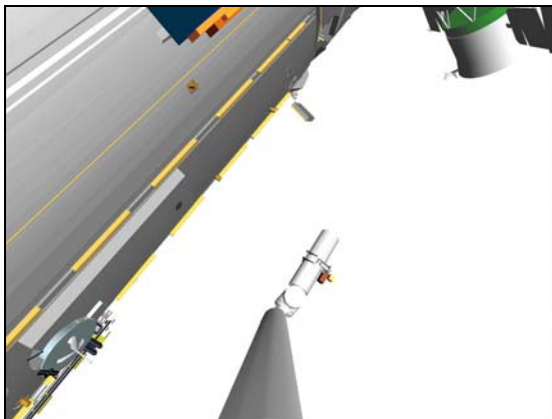
AUTO SEQ – PROCEED (IN PROG lt on)

When AUTO SEQ IN PROG lt – off:  
                  BRAKES – ON (tb-ON)

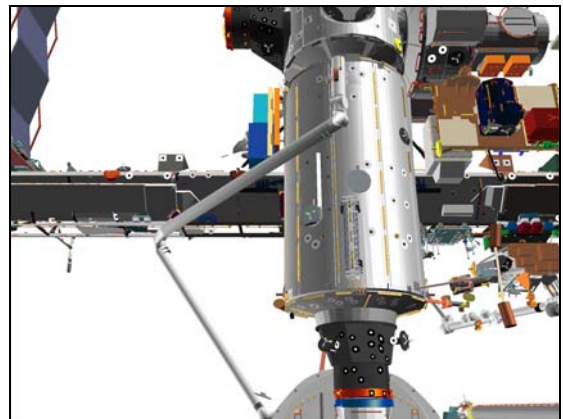
√MODE    – not DIRECT

APFR PRE-INSTALL posn: (1:30)

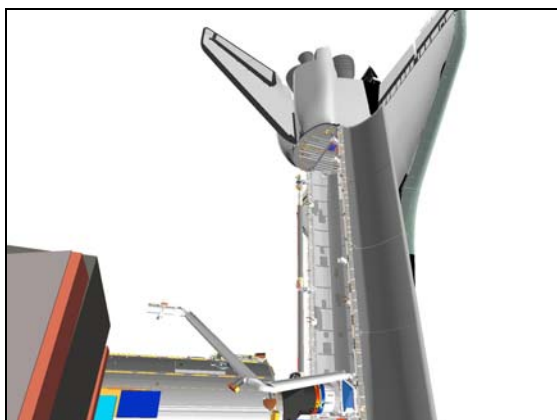
	X	Y	Z	PITCH	YAW	ROLL	PL ID
√	-793	-29	-809	90	359	162	0
	SY	SP	EP	WP	WY	WR	
√	-57.1	+108.4	-108.2	+72.2	-11.0	+122.6	



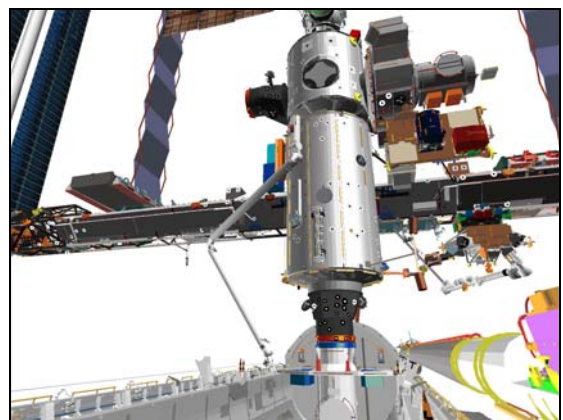
**SRMS ELBOW (0,10)**



**CCTV B (0,20)**



**P1 LOWER OUTBOARD (110,30)**



**CCTV C (-15,20)**



# MSG 060 - SRMS OMS POD BLANKET REPAIR PROCEDURE

## 4. APFR INSTALL

RHC      √RATE      – VERN (RATE MIN tb-ON)  
             BRAKES – OFF (tb-OFF)  
             MODE    – ORB UNL, ENTER

### NOTE

THC – Push moves arm away from US LAB  
THC – Pull moves arm towards US LAB

Monitor clearance between SRMS and the US LAB  
using SRMS Elbow camera

Mnvr per EV GCA call to APFR INSTALL posn

BRAKES – ON (tb-ON)

## 5. MNVR TO APFR INGRESS

RHC      √RATE      – VERN (RATE MIN tb-ON)  
             BRAKES – OFF (tb-OFF)  
             MODE    – ORB UNL, ENTER

### NOTE

Monitor clearance between SRMS and the US LAB  
using SRMS Elbow camera

Mnvr per EV GCA call to APFR INGRESS posn

Expected APFR INGRESS posn:                      WIF Ext: 6/A/7   APFR: 12/OO/F/6

X	Y	Z	PITCH	YAW	ROLL	PL ID
-783	-29	-768	90	359	162	0
-727	-29	-850	189	2	181	5
SY	SP	EP	WP	WY	WR	
-57.5	+112.2	-118.8	+79.1	-10.8	+122.3	

BRAKES – ON (tb-ON)

√MODE    – not DIRECT

If shuttle is controlling attitude, then:

DAP: VERN(FREE)

SM 94 PDRS CONTROL

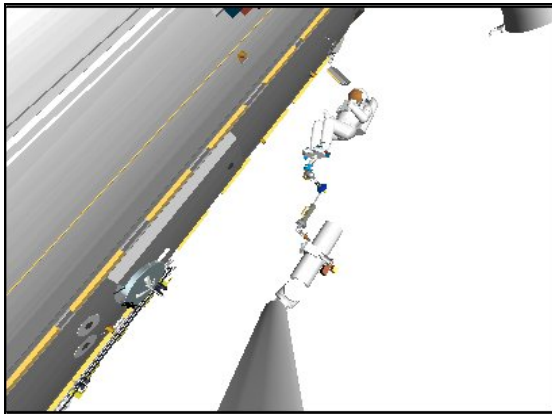
PL ID – ITEM 3 +5 EXEC

INIT ID – ITEM 24 +5 EXEC

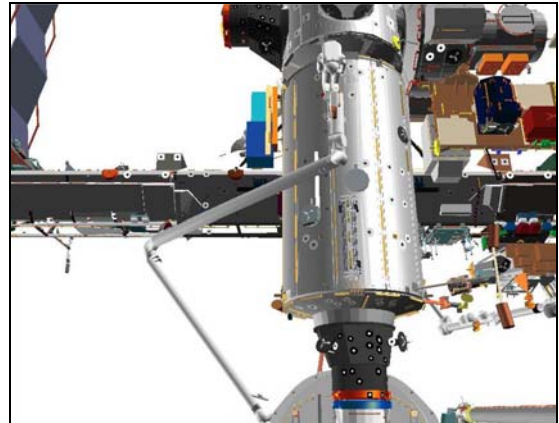
SM 95 PDRS OVERRIDE

LOADED RATES – ITEM 14 EXEC (\*)

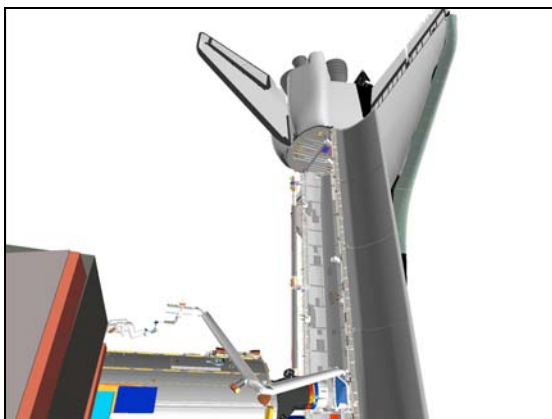
# MSG 060 - SRMS OMS POD BLANKET REPAIR PROCEDURE



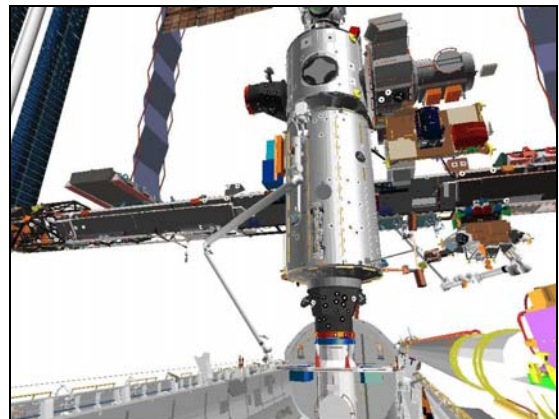
**SRMS ELBOW (0,10)**



**CCTV B (0,20)**



**P1 LOWER OUTBOARD (110,30)**



**CCTV C (-15,20)**

## 6. MNVR TO INTERMEDIATE POSITION

RHC

√RATE – VERN (RATE MIN tb-ON)

BRAKES – OFF (tb-OFF)

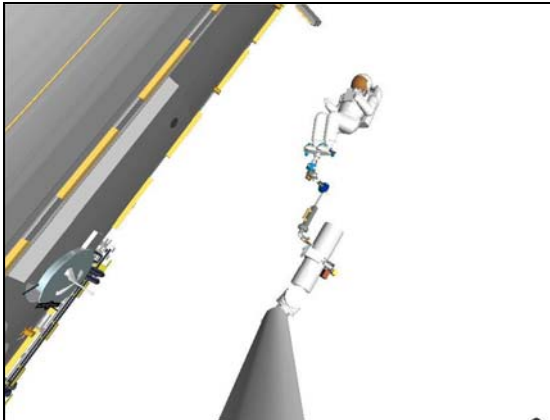
MODE – ORB LD, ENTER

Mnvr to INTERMEDIATE posn (within 2"/1°):

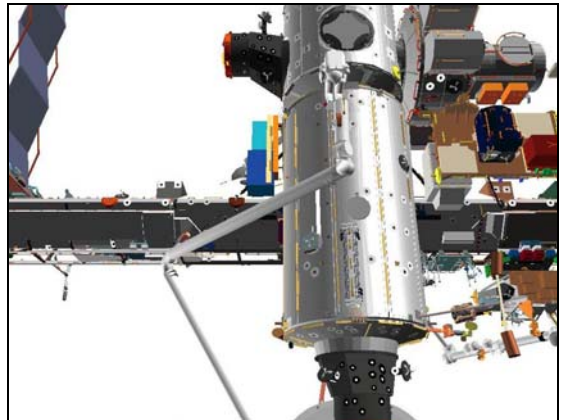
X	Y	Z	PITCH	YAW	ROLL	PL ID
-765	-29	-850	189	2	181	5
SY	SP	EP	WP	WY	WR	
-48.7	+106.1	-114.3	+82.9	-13.7	+131.5	

BRAKES – ON (tb-ON)

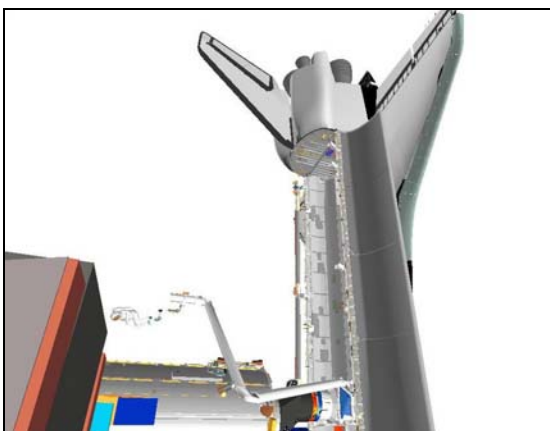
# MSG 060 - SRMS OMS POD BLANKET REPAIR PROCEDURE



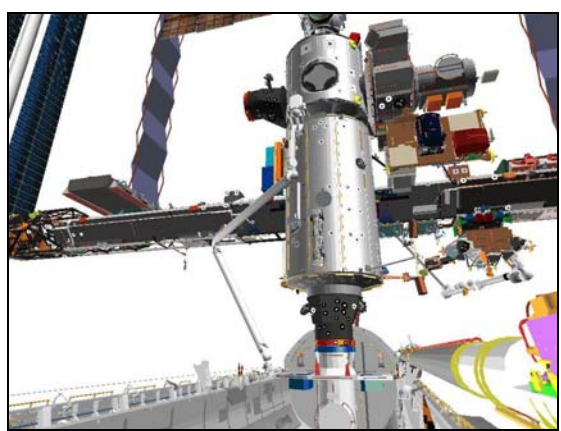
**SRMS ELBOW (0,10)**



**CCTV B (0,23)**



**P1 LOWER OUTBOARD (110,30)**



**CCTV C (-15,20)**

## 7. MNVR TO HOVER POSITION

A7U

CCTV – config as reqd

MON 1	Elbow
MON 2	A
DNLK	P1LO (LAB)
DTV	C

### SM 94 PDRS CONTROL

END POS – ITEM 18 -1 2 6 3 -1 3 3 -5 1 1 EXEC

ATT – ITEM 21 +2 6 6 +3 1 8 +3 5 7 EXEC

CMD CK – ITEM 25 EXEC (GOOD)

RHC

√RATE – VERN (RATE MIN tb-ON)

BRAKES – OFF (tb-OFF)

MODE – OPR CMD, ENTER (READY It on)

AUTO SEQ – PROCEED (IN PROG It on)

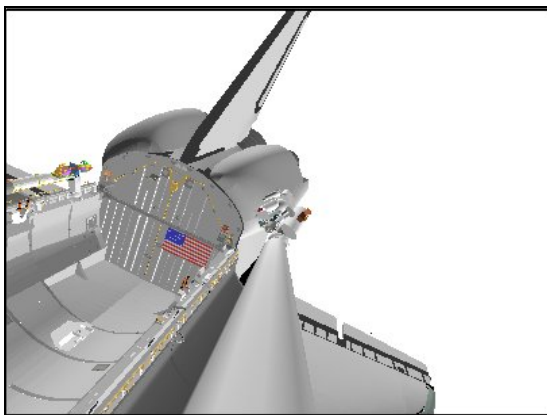
When AUTO SEQ IN PROG It – off:

# MSG 060 - SRMS OMS POD BLANKET REPAIR PROCEDURE

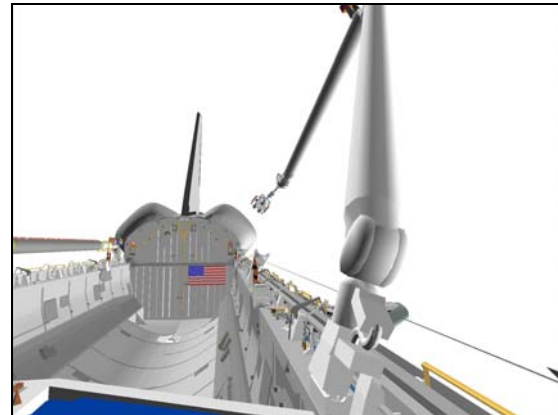
HOVER posn:

(4:00)

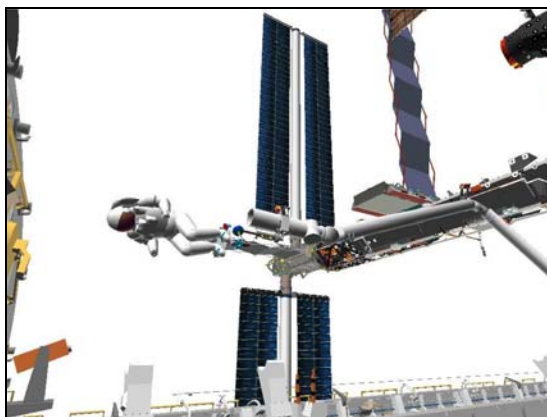
	X	Y	Z	PITCH	YAW	ROLL	PL ID
√	-1263	-133	-511	266	318	357	5
	SY	SP	EP	WP	WY	WR	
√	+2.5	+52.1	-71.4	+24.7	-0.9	+22.9	



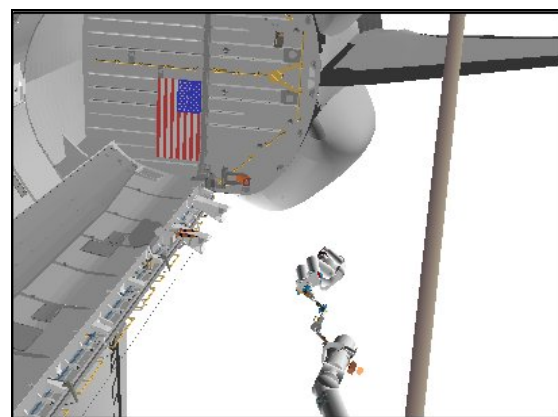
**SRMS ELBOW (0,0)**



**CCTV A (10,5)**



**CCTV C (-60,20)**



**13: LAB STBD ZENITH (-10,-40)  
ZOOM: 15 mm**

## 8. MNVR TO BLANKET REPAIR POSITION

A7U

CCTV – config as reqd

MON 1	Elbow
MON 2	A
DNLK	P1LO
DTV	D

## NOTE

SRMS will reach an EP singularity past X= -1361

RHC

√RATE – VERN (RATE MIN tb-ON)  
MODE – ORB LD, ENTER

## MSG 060 - SRMS OMS POD BLANKET REPAIR PROCEDURE

### NOTE

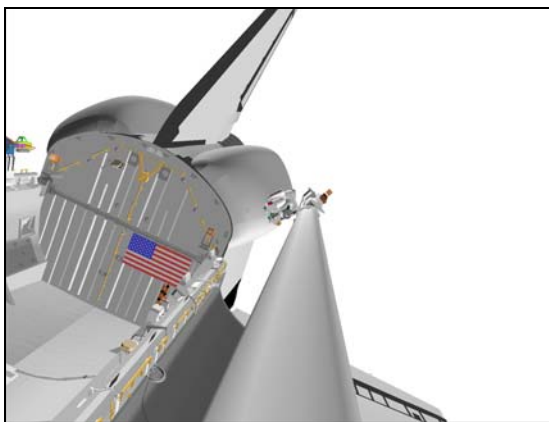
Expect THC push in and down per EVA GCA to move to worksite

Mnvr per EV GCA call to BLANKET REPAIR posn

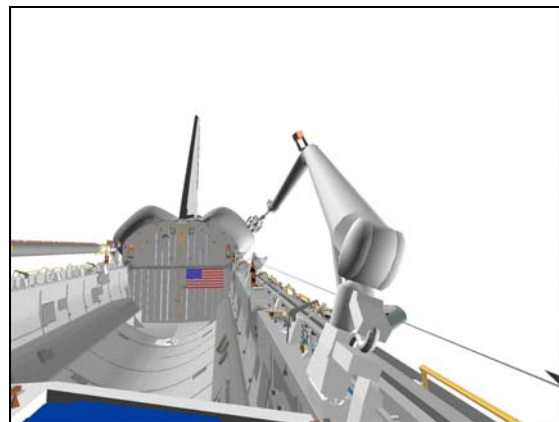
Expected BLANKET REPAIR posn:

X	Y	Z	PITCH	YAW	ROLL	PL ID
-1351	-133	-486	266	318	357	5
SY	SP	EP	WP	WY	WR	
+3.0	+22.9	-25.7	+8.2	-1.4	+23.0	

**BRAKES – ON (tb-ON)**



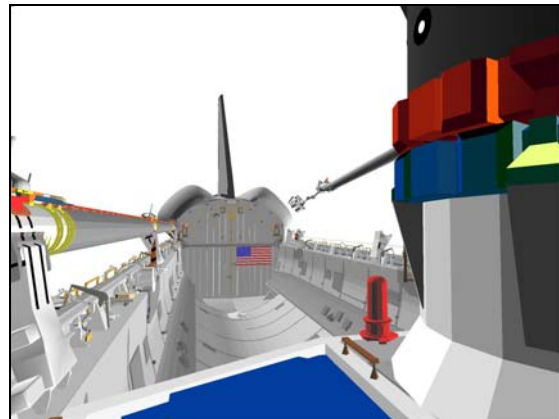
**SRMS ELBOW (-5,-5)**



**CCTV A (10,5)**



**P1 LOWER OUTBOARD (117,47)**



**CCTV D (14,2)**

9. MNVR TO HOVER POSITION

On EV GO repair complete,

RHC      √RATE    – VERN (RATE MIN tb-ON)  
              BRAKES – OFF (tb-OFF)  
              MODE    – ORB LD, ENTER

Mnvr to HOVER posn:

X	Y	Z	PITCH	YAW	ROLL	PL ID
-1263	-133	-511	266	318	357	5
SY	SP	EP	WP	WY	WR	
+2.5	+52.1	-71.4	+24.7	-0.9	+22.9	

BRAKES – ON (tb-ON)

10. MNVR TO INTERMEDIATE POSITION

A7U      CCTV – config as reqd

MON 1	Elbow
MON 2	B
DNLK	P1LO
DTV	C

SM 94 PDRS CONTROL

END POS – ITEM 18   -7 6 5   -2 9   -8 5 0 EXEC          ATT – ITEM 21   +1 8 9   +2   +1 8 1 EXEC

CMD CK – ITEM 25 EXEC (GOOD)

RHC      √RATE    – VERN (RATE MIN tb-ON)  
              BRAKES – OFF (tb-OFF)  
              MODE    – OPR CMD, ENTER (READY lt on)

AUTO SEQ – PROCEED (IN PROG lt on)

When AUTO SEQ IN PROG lt – off:

BRAKES – ON (tb-ON)

INTERMEDIATE posn: (4:00)

	X	Y	Z	PITCH	YAW	ROLL	PL ID
√	-765	-29	-850	189	2	181	5
	SY	SP	EP	WP	WY	WR	
√	-48.7	+106.1	-114.3	+82.9	-13.7	+131.5	

11. MNVR TO APFR EGRESS

RHC      √RATE    – VERN (RATE MIN tb-ON)  
              BRAKES – OFF (tb-OFF)  
              MODE    – ORB LD, ENTER



## MSG 060 - SRMS OMS POD BLANKET REPAIR PROCEDURE

### NOTE

THC – Push moves arm away from US LAB

THC – Pull moves arm towards US LAB

Monitor clearance between SRMS and the US LAB  
using SRMS Elbow camera

Mnvr per EV GCA call to APFR EGRESS posn

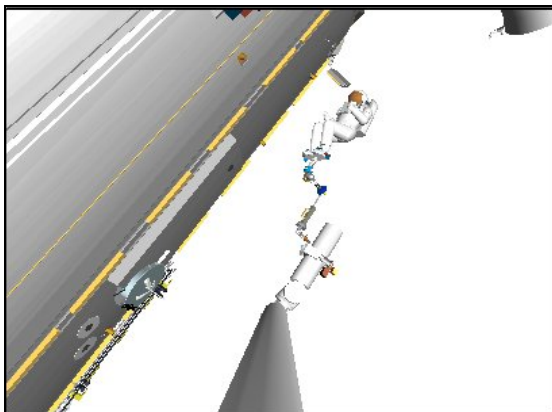
Expected APFR EGRESS posn:

X	Y	Z	PITCH	YAW	ROLL	PL ID
-726	-29	-850	189	2	181	5
SY	SP	EP	WP	WY	WR	
-57.4	+112.0	-118.6	+79.4	-11.3	+122.9	

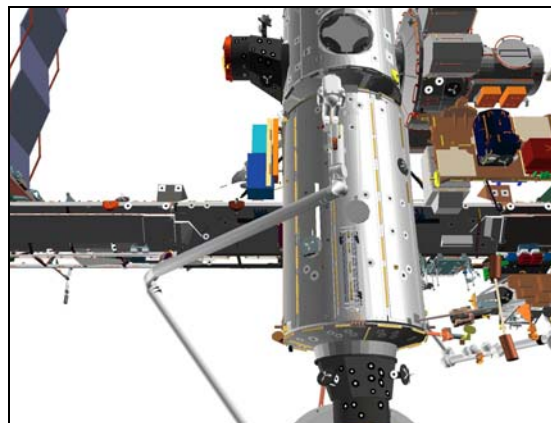
BRAKES – ON (tb-ON)

√MODE – not DIRECT

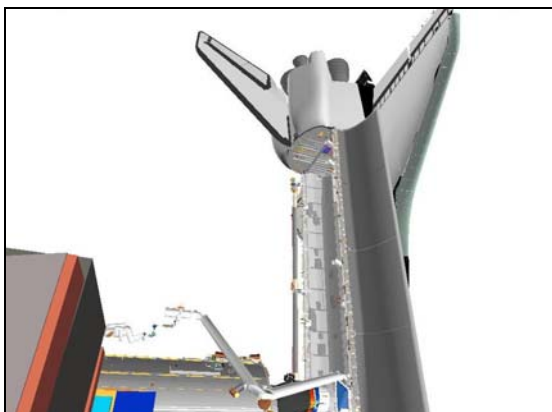
If shuttle is controlling attitude, then  
DAP: as reqd



**SRMS ELBOW (0,10)**



**CCTV B (0,23)**



**P1 LOWER OUTBOARD (110, 30)**



**CCTV C (-20,20)**

12. APFR REMOVALSM 95 PDRS OVERRIDE

LOADED RATES – ITEM 14 EXEC (no \*)

SM 94 PDRS CONTROL

PL ID – ITEM 3 +0 EXEC

INIT ID – ITEM 24 +0 EXEC

RHC     √RATE     – VERN (RATE MIN tb-ON)  
              BRAKES – OFF (tb-OFF)  
              MODE     – ORB UNL, ENTER

Mnvr per EV GCA call to APFR REMOVAL posn

BRAKES – ON (tb-ON)

√MODE     – not DIRECT

13. MNVR TO BACKOFF POSITION

RHC     √RATE     – VERN (RATE MIN tb-ON)  
              BRAKES – OFF (tb-OFF)  
              MODE     – ORB UNL, ENTER

Mnvr to BACKOFF posn (within 2"/1°):

X	Y	Z	PITCH	YAW	ROLL	PL ID
-820	-29	-768	90	359	162	0
SY	SP	EP	WP	WY	WR	
-49.2	+106.6	-114.8	+82.4	-13.2	+130.5	

BRAKES – ON (tb-ON)

14. MNVR TO PRE-CRADLE POSITIONSM 94 PDRS CONTROL

END POS – ITEM 18 -1 2 6 1 -1 4 6 -5 5 1 EXEC

ATT – ITEM 21 +5 +2 +0 EXEC

CMD CK – ITEM 25 EXEC (GOOD)

RHC     √RATE     – VERN (RATE MIN tb-ON)  
              BRAKES – OFF (tb-OFF)  
              MODE     – OPR CMD, ENTER (READY lt on)

AUTO SEQ – PROCEED (IN PROG lt on)

When AUTO SEQ IN PROG lt – off:

BRAKES – ON (tb-ON)

# MSG 060 - SRMS OMS POD BLANKET REPAIR PROCEDURE

PRE-CRADLE posn: (1:30)

	X	Y	Z	PITCH	YAW	ROLL	PL ID
√	-1261	-146	-551	5	2	0	0
	SY	SP	EP	WP	WY	WR	
√	0.0	+25.0	-25.0	+5.0	0.0	0.0	

## 15. MNVR TO SAW RETRACT VIEWING

RHC

√RATE – VERN (RATE MIN tb-ON)

BRAKES – OFF (tb-OFF)

MODE – SINGLE, ENTER

Mnvr to SAW RETRACT VIEWING posn:

	SY	SP	EP	WP	WY	WR	
Pre-Cradle	0.0	+25.0	-25.0	+5.0	0.0	0.0	
SY +	+160.0						
SAW Retract Viewing	+160.0	+25.0	-25.0	+5.0	0.0	0.0	
	X	Y	Z	PITCH	YAW	ROLL	PL ID
	-133	-333	-485	182	21	142	0

BRAKES – ON (tb-ON)

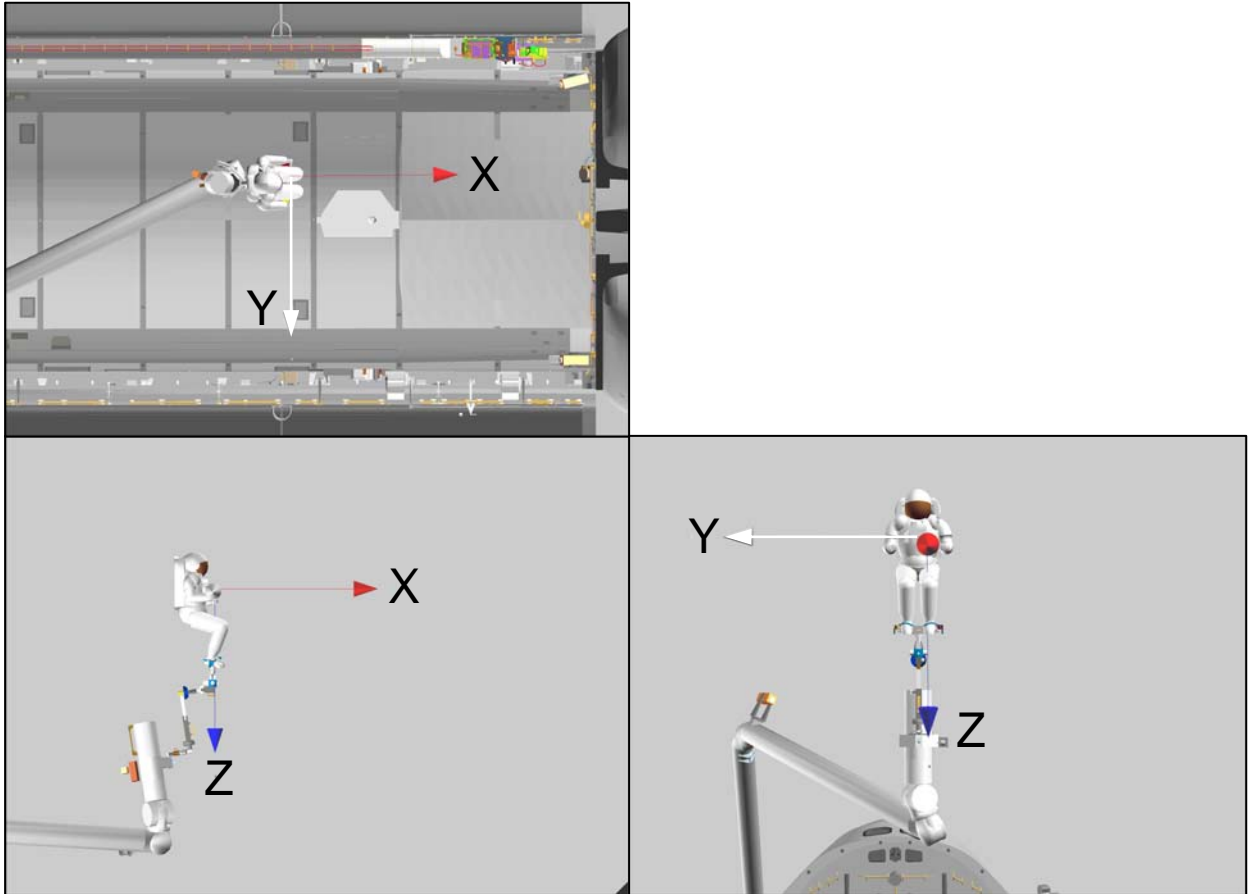
√MODE – not DIRECT

PARAM – PORT TEMP

JOINT – CRIT TEMP

Notify SSRMS operator SRMS at SAW Retract Viewing posn with Brakes ON

**EVA COORDINATE SYSTEM – PL ID 5**



POR: POR at center of EVA's chest (WIF Extender: 6/A/7  
APFR: 12/OO/F/6)

PURPOSE: EVA operations

RATES:	<u>COARSE</u>	<u>VERN</u>
TRANS LIM ft/sec	0.71	0.24
ROT LIM deg/sec	2.66	0.89

# MSG 061A - MODIFIED GROUP C POWERDOWN PROCEDURE

Please perform the following Modified Group C Powerdown Procedure **on MCC GO**.

PNL	PWRDN	NOTES
O6	1. Minimize Lighting Turn off all lights except two Middeck lts (use no lts for single-shift sleep)	1
	2. Use only one IDP with three MDUs max	2
	3. MDM PL2 – OFF	3
	4. S TRK PWR -Y – OFF	
O16:F	5. MDM FF2,4 (two) – OFF	
O6	6. ASA 3 – ON, then ASA 4 – OFF, then MDM FA4 – OFF	4
	7. <u>PGSC</u> Required: OCA, KFX, WLES (STS-7) All other PGSCs – OFF, ON as required	
OCAC SSV	8. COLOR PRINTER – OFF, ON as required	
	9. OCAC PWR – OFF	5
	10. SSV Pwr – OFF	
	11. Perform GPS PWRDN (ORB OPS, <u>GNC</u> ) for GPS 2	6

1. Reference the IDP/CRT 1(2,3) POWER OFF/ON Cue Card provided in the FD7 Execute Pack (MSG049A)
2. Before powering off PF2 MDM, √MCC for Antenna Electronics 1 activation
3. GNC will request that the -Y star tracker be powered on for approximately two orbits about every other day. This is required to obtain star vector information for IMU alignment verification.
4. Power on ASA3 to maintain elevon park before FA4 is powered down.
5. The OCAC can be re-enabled for crew sleep as needed, to help in minimizing CO2 pockets.
6. Powerdown GPS 2 and Pre-amps since it will be unavailable when FF2 is powered down.

## MSG 044 (15-0425) - FD06 MMT SUMMARY

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### FD6 MMT Summary

The MMT met today and the main topics of discussion were the Port OMS Pod Blanket EVA repair, DAT results, and the ISS attitude control issues. The MMT did decide that EVA 3 would be used to secure the torn blanket if the MCC preparation and crew procedures could be safely completed which includes the onboard training and procedure review.

#### Port OMS Blanket Repair:

Team 4 briefed the MMT on the downselect options for the EVA blanket repair. This team has been working in conjunction with Orbiter Project and Engineering personnel regarding the best method to secure the torn blanket. Blanket pull tests utilizing the different attach methods were conducted last night and the best option to secure the blanket is to fold down the raised edge, staple it to the adjacent blanket, and then using the Saffil pins secure both blankets to the front row of edge tile. Arc Jet testing as well as wind tunnel testing are being conducted to verify this configuration. However, based on the pull tests, the team has confidence in this method to secure the blanket.

The MMT decision to conduct the blanket repair on EVA 3 was based on this repair being the highest priority for the remaining EVA's. In addition, by completing the repair on EVA 3 the team would have time to respond with EVA 4 if an unknown problem arose in securing the blanket.

As always the Operations team will provide you with the EVA/Robotics details once they are finalized.

#### Imagery/Debris Assessment Team:

All TPS has been cleared with the exception of a section of Right Inboard elevon (RIB) tile. Due to the RIB elevon imagery being partially obscured by shadows during the RPM maneuver, the team can not conclusively clear this TPS, and as a result, may try and gather additional imagery during late inspection. There is extremely low concern from the team regarding these particular tiles.

#### Space Station Attitude Control:

The MMT was briefed on the current ISS attitude control issues and how this will affect the remainder of docked operations. Currently, the ISS does not have the ability to provide attitude control other than from the CMG's. In order to prevent saturation of the CMG's and use of Orbiter RCS propellant to maintain attitude control, water dumps will be moved to at least flight day 9. In addition, the MMT also asked the Operations team look at methods to preserve cryo margin to allow for an extra docked day if required.